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IRON TRADE REVIEW

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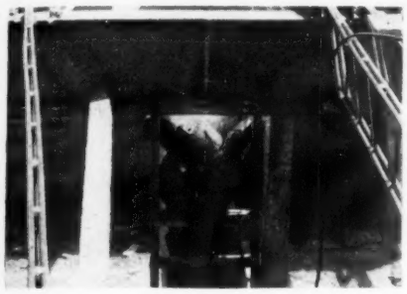

Welding of Structural Steel Finding Wider Use. Page 48.

THIS WEEK:

MODERN architecture transcends the beautiful and becomes sublime. And in its monumental works it is relying more and more on the new chrome-nickel steels, for character and embellishment. The ultra-modern Empire State building in New York, rising to a height of a quarter of a mile, requires 300 tons of such steel for window trim, "sunbursts" and storefronts, in addition to other tonnage for the interior. Twenty-five tons are to be used in a 200-foot dirigible mooring mast. The fabrication of the steel makes an interesting article, beginning on page 43.

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STEEL-SERVICE

Volume 87 Number 6

IRON TRADE REVIEW
STEEL

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

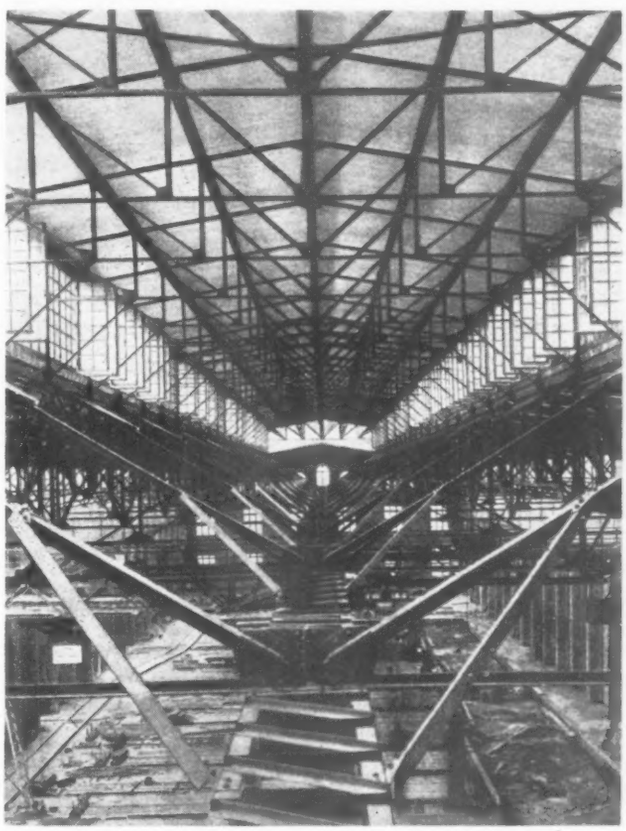
SEVERE as the drought in steel orders is, it is nothing compared with the drought which is burning up crops of practically the entire United States east of the Rockies. Steel producers no less assiduously than farmers are scanning weather forecasts, anxious to relate crop damage in terms of curtailed buying power. Manufacturers of farm implements have a primary interest, of course, but the railroads and the automotive industry largely gage their requirements for steel upon the farmer, who absorbs 30 to 40 per cent of all manufactures. It augurs ill that the farmer may go into the winter in the worst financial condition in this generation. . . . That phrase, buying power, is the master key to the economic situation. Undoubtedly over-stimulation of buying power last year was a major cause of the present distress in business. Today, the buying power of the farmer is genuinely restricted. That of the wage earner has suffered from shorter work weeks and reduced wage rates. Now there are signs that those possessed of ample buying power are withholding it. In a Pennsylvania mill town, for example, the sale of a new luxurious automobile has fallen to the vanishing point because those in position to afford it fear to make such a display before the unemployed.

Washington Refuses To See Red

There still is an international flavor to the news of the week in steel. Soviet Russia continues the target of organized labor and domestic producers of manganese, but is getting a better break at Washington. The ban on imports of soviet pulpwood has been lifted, and from what was the White House "spokesman" in other days comes the assurance that a blanket embargo on soviet products will not be laid, at least not without the backing of specific accusations. Senator Oddie again is pressing for a dumping order on soviet manganese, and organized labor threatens to invoke a little-known clause in the new tariff act, prohibiting after 1931 all imports based upon forced labor. But for the moment, the tension is over and a cloud on American participation in Russia's reconstruction is lifting. (Page 23).

Three Setbacks in Canada's Tariff

Canada, meanwhile, is assembling materials for her tariff wall, which opponents of the new Hawley-Smoot act term a spite fence. This wall, to be completed by Sept. 30, will copy



Will efforts to check Russian imports endanger American participation in rebuilding Russia? Depicted above is the new high-grade steel plant under construction at Bogorodsk

the new American architecture and have three setbacks. If the dominion can supply a given product, then there will be a barrier against the rest of the British Empire as well as the United States. If the dominion cannot supply the product, then the tariff wall will be lower for the rest of the empire than for the United States. But if the empire cannot reasonably provide the product, then the wall will be an equal height for all comers. It may prove a happy coincidence that at the time Canada sets out to develop her iron ore resources in Ontario the overturn in the government at Ottawa brings a higher tariff that might stimulate the upbuilding of her own iron and steel industry. (Page 33).

Railroads Lead in Round Three

Two years ago the railroads, from time immemorial leaders in the consumption of steel, bowed to the strident, pushing automobile industry. Last year automobile manufacturers took the long count, and the belt returned to the railroads. Neither industry can boast much concerning its performance thus far in 1930, but it looks as if the railroads still have the edge. Track material purchases being stable, they are a source of strength to the railroads, as freight car and locomotive orders have not shrunk as much as passenger car and truck production. (Page 34). . . . President Hoover could better stand the wilting heat of the Washington summer if he could speedily determine the personnel of two important commissions. And speaking of commissions, the President is getting the least bit touchy over the impression that they are a fetish with him. At any rate, the task of selecting a new tariff commission, distributing its members politically and geographically, is a trying one. For an unemployment commission, to formulate a plan for systematic determination of the number of jobless, the President will turn to important business and labor bodies. (Page 27).

1922 Comparison Pales «Sunshine» Talk

To bolster sentiment, it has been said frequently that market conditions have been better maintained than in 1922. For a number of weeks, iron and steel prices have been dangerously close to the level of 1922, and now production seems to be slipping into this valley. July's daily rate of pig iron production is disclosed this week (Page 28) as being the lowest since October, 1924, while a net decline of 18 in the number of blast furnaces blowing lowered the active list as of July 31 to 144, the fewest since August, 1922. To put it another way, all of the gain in pig iron production from late 1924 to late 1929 has been washed out in the past eight months. . . . The markets this week are indecisive, but sentiment droops perceptibly. Drought damage seems certain to restrict sales of wire products and tin plate, while indirectly other iron and steel products are bound to suffer. Automobile manufacturers, with three noteworthy exceptions, and most parts makers resumed this week, but thus far have not made themselves vocal to steel sales managers. More soft spots have developed in iron and steel prices. (Page 93). . . . They have a way in Europe of handling price cutters which must be the envy of the larger American producers. As noted in recent weeks, the continental steel entente has completely collapsed. Out of the wreckage has been salvaged some control over semifinished and structural steel, exercised by comptoirs which clear and price all orders through a central office. In bars, hoops, strip and plates the smaller producers have refused to play ball with the larger ones, and the latter accordingly have declared a free market on the theory they can outlive ruinous prices longer than the small makers. (Page 20).

Now They're Shipping Steel in Cartons

New York's tallest, the Empire State building, with its steel frame now erected above the half-way point, is utilizing 300 tons of polished chrome-nickel corrosion-resisting sheets as exterior ornamentation. This metal is being fabricated in Canton, O. (Page 43) and shipped to New York in boxboard cartons. . . . Welding of steel frames of buildings and bridges is coming forward rapidly in the United States, about 100 structures having been fabricated partially or wholly by this method. A formula is given for transferring dead load stress to new members or reinforcement, when old structures are strengthened. (Page 48). . . . . Approximately 5000 tons of steel is consumed each year in the manufacture of lightning arresters used as protective devices in the transmission of electric power. (Page 52). . . . Standard gray finish, adopted some months ago by machine tool builders, recently has been accepted as standard by numerous builders of cranes, hoists and other industrial equipment (Page 79). . . . Cutting high-manganese steel is now possible, thanks to new cobalt high-speed twist drills (Page 67). . . . Rolled steel rings, each weighing 50 tons, have been produced by a British manufacturer for a variable density tunnel. (Page 65).

No Blanket Ban on Russian Products, Says Washington

CALMER counsel appears to prevail in the treatment of imports from Soviet Russia. With the removal of the ban on receipts of pulpwood, the treasury department at Washington states that in the future embargoes on Russian products will be laid only on the submission of specific complaints.

At the White House it has been stated officially that no discriminatory action will be taken against Russia. The administration is drawing a distinct line of demarcation between Russia politically and Russia industrially, and the character of the soviet government will not color Washington's attitude.

These assurances, however, have not quieted the active campaign of certain interests against Russia. Senator Tasker L. Oddie, of Nevada, chairman of the senate committee on mines and mining, has made a second demand for the prohibition of imports of Russian manganese, on the ground such imports constitute dumping.

Say Russian Labor Not Free

Organized labor, acting through the Wage Earners' Productive conference, consisting of national and international unions with a claimed membership of 500,000 and whose spokesman is Matthew Woll, vice president of the American Federation of Labor, adheres to its program of barring all soviet products by 1932, on the ground Russia has no "free" labor.

On Jan. 1, 1932, there becomes operative a clause in the new tariff law prohibiting the importation of products produced by convict, forced or indentured labor, including raw materials as well as manufactured products, and under this provision, organized labor hopes to have an embargo declared.

The Russian five-year program is being financed by the low wages and forced labor in force in Russia, according to Mr. Woll, and a ban on imports would not only protect American labor from a species of unfair competition but would also benefit Russian workers themselves.

Senator Oddie's second proposal for an embargo on Russian manganese, to the treasury department, follows:

With further reference of my letter of July 30, 1930, urging that an embargo be placed upon Russian manganese ore imports, I decide to call your particular attention to the emergency relief which may be afforded under the provisions of the anti-dumping act of 1921.

It is generally known that the Harriman interests were forced to relinquish their concession on the Caucasus manganese deposits because they failed to meet production costs when the world price of manganese was 40 cents per long ton unit of 22.4 pounds of metallic manganese. It is, therefore, inconceivable that under the present soviet management, costs of production have been lowered sufficiently to permit this ore to be laid down in the United States at a cost of even 30 cents per unit.

Notwithstanding this, Russian manganese is freely offered for sale delivered at American seaboard ports at 25 cents per unit plus the duty. Furthermore, it is understood that the Russian ore has been sold in Europe at prices substantially higher than those at which similar ore is being offered and sold in American markets. It is also reported that agents of the Soviet manganese ore trust have assured consumers in the United States that they are prepared to under-quote domestic producers of manganese ore at all times.

Under these circumstances, and the crisis which exists in the American manganese industry, with mines and plants being shut down due to the dumping and unfair trade practices of the Soviet government, I hereby petition under the provisions of the anti-dumping act of 1921, that from this date liquidation of entries of manganese ore imported from Soviet Russia be suspended until a satisfactory ascertainment of the proper anti-dumping increment of duty shall have been determined.

While it may require some little time to determine the facts upon which an embargo on Russian manganese ore, urged in my letter of July 30, 1930, can be made effective, this petition, if promptly acted upon, will afford a measure of immediate relief to the American manganese industry.

The American Manganese Producers' association, Washington, which originally asked for the ban on manganese, may call a conference in New York soon of all industries affected by so-called Russian dumping. Officials of the Amtorg Trading Corp., New York, which has been placing Russian equipment orders in the United States, have denied any use of forced labor in connection with imports.

The Fish committee of congress, investigating alleged communistic agitation in this country, will reconvene in New York, Sept. 26 or 27.

Foreign Ore 90 Per Cent of Manganese Used

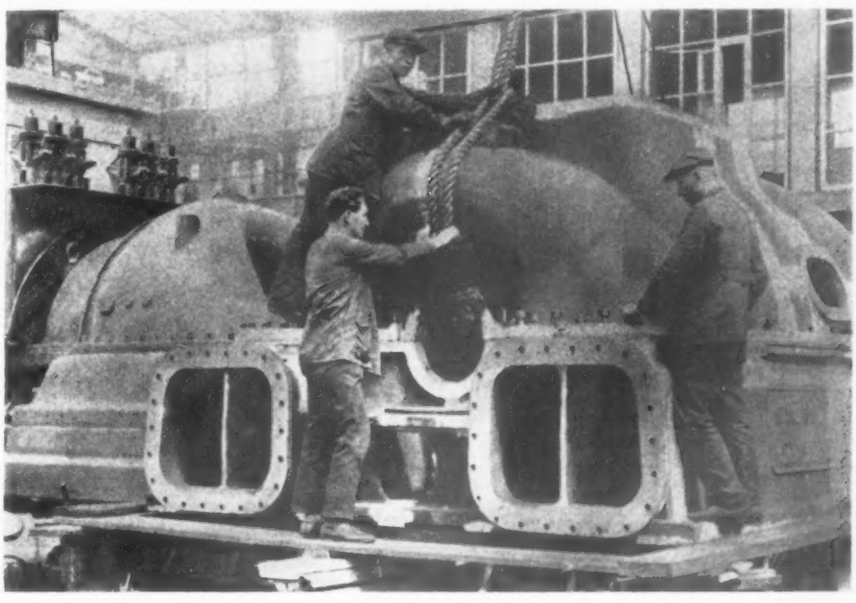
Washington—Bureau of mines authorities estimate that the United States in 1929 consumed 725,458 gross tons of manganese ore, containing 35 per cent or more manganese. Of this, 664,269 tons valued at $8,450,818 were imported and 60,379 tons valued at $1,612,357 represented domestic production. In addition 810 tons from bonded warehouses were withdrawn last year. Imports from Russia totaled 169,121 gross tons valued at $5,452,366.

In the first five months of 1930 manganese imports from Russia totaled 146,135 tons, against 114,312 tons a year ago. For the first six months of 1930 (omitting the June 18-30 period because details are not yet available) Russian imports were 162,174 tons; in the entire first half of 1929 they were 165,602 tons.

Tractor Order Totals 12,000

Chicago—The order received by the International Harvester Co., Chicago, from soviet Russia for a reported amount of $7,000,000 is for 12,000

(*Concluded on Page* 25)



THIS TURBINE WILL MOTIVATE RUSSIAN MILL MOTORS

Low pressure section of 22,000-kilowatt turbine being installed in power house of Leningrad Metal Works

Merger Lawyers Work on Agreement To Shorten Trial

IN AN effort to shorten the trial of the Bethlehem-Sheet & Tube merger suit, now in its sixth week, lawyers for both sides are working on a stipulation agreement involving 60,000 shares of Sheet & Tube common that were challenged in the merger ratification meeting.

The agreement would shorten the trial by two weeks, simplifying the ground so that it could be covered in a half day in court. The amount of the stock is sufficient to defeat or uphold the merger.

It was expected in Youngstown, O., where the trial is on before Judge David G. Jenkins, in Mahoning county common pleas court, that Cyrus S. Eaton, leader of the merger opponents, might take the witness stand this week.

At the resumption of the trial this week Thomas J. Bray, Sheet & Tube director and former president of Republic Iron & Steel Co., gave reasons why he was in favor of the merger. The revelations regarding Bethlehem bonus payments, he said, did not alter his opinion.

Hassel Tippit, an accountant with the auditing firm, Ernst & Ernst, representing Eaton interests, next on the stand, gave to lawyers for merger opponents a statement eliminating $17,000,000 from Bethlehem Steel Corp.'s 1929 earnings, and $2,000,000 from Sheet & Tube earnings, making "an adjusted basis" of $51,000,000 for Bethlehem and $34,000,000 for Sheet & Tube.

On this adjusted basis, it was contended, the first basis of exchange as proposed by Price, Waterhouse & Co., of 1.20 shares of Bethlehem for one of Sheet & Tube should have been 1.66 to one, while the basis finally arrived at, 1 1/3 for one, should have been 1.79 for one.

Favor Merger Despite Bonus

Reasons why they as Sheet & Tube directors voted for the merger were given last Friday by Richard Garlick and John W. Ford. Both said the Youngstown district has been steadily declining in importance in the steel industry from causes it could not overcome, and they believed its position would be strengthened by the merger.

They said they would have voted for the merger with Bethlehem even had they known of the payment last year of $1,600,000 in bonus to President Eugene G. Grace. In this position they were backed up by Chairman James A. Campbell who was recalled to the stand. Mr. Ford declared that Mr. Grace in building up Bethlehem's plants to their present high standards had "done a man's size job, and Bethlehem directors probably knew what they were doing when they voted him the bonus."

Reasons given by Mr. Ford for the decline of the Mahoning valley's importance in the iron and steel industry included lack of diversification of products by the plants, abolition of "Pittsburgh plus," adverse rulings on freight rates and recent fundamental changes in methods of making sheets and tubular products. Mr. Garlick agreed with Mr. Ford and added another reason, the change in blast furnace practice to the use of by-product coke. When Connellsville beehive coke was employed exclusively in production of pig iron Youngstown's proximity to the coke fields was one of its advantages.

In connection with the Bethlehem bonuses, announcement was made by Attorney F. H. Wood, of Bethlehem counsel, that Charles M. Schwab, chairman of Bethlehem's board, is paid a straight salary of $150,000 yearly and draws no bonus. At the same time a list of bonuses paid for five years by Bethlehem to other executives was introduced in response to a previous ruling by the court.

Every step taken in the series of proceedings which culminated in the vote of Sheet & Tube stockholders in favor of the merger was described in detail by Walter E. Meub, secretary of the Sheet & Tube company. He told of the voting of 14,392 shares of Sheet & Tube common stock for the 89 employe stockholders in favor of the merger. At this point attorneys for Sheet & Tube withdrew six votes for the merger that had been counted erroneously. They were shares owned by Elizabeth Fisher who had given a proxy for them to W. B. Thomas. Thomas was not present at the voting and did not cast a ballot. These are the only ballots so far subtracted from the total of 240,000 which the Wick-Eaton merger opponents have threatened to attack.

Compile Cost Statistics

W. N. McDonald, comptroller for Sheet & Tube, in the course of a lengthy cross-examination by H. J. Crawford, Wick-Eaton attorney, testified that Sheet & Tube and Bethlehem were two of six steel companies which for five or six years have been exchanging detailed production cost sheets. These have been compiled by Bethlehem auditors into a composite, copies of which have been distributed to the six participants. It is understood the other four are Republic Steel Corp., Wheeling Steel Corp., United States Steel Corp. and Inland Steel Co.

Mr. McDonald testified that the difference of over $6,000,000 between Sheet & Tube's own estimate of cost of "maintenance and repairs," which

Bonus and Salary Exhibit in Merger Suit

	1925	1926	1927	1928	1929	Salaries effective during participation in bonus
E. G. Grace, Pres.	$700,473	$852,160	$721,885	$831,445	$1,623,753	$12,000
H. E. Lewis, Vice Pres.	160,530	195,846	165,466	191,013	375,784	10,000
C. A. Buck, Vice Pres.	163,410	198,726	168,346	193,895	378,664	10,000
H. S. Snyder, Vice Pres.	163,410	.....	.....	.....	.....	10,000
Q. Bent, Vice Pres.	163,410	198,726	168,346	193,895	378,664	10,000
A. Johnston, Vice Pres.	116,733	12,838	10,875	12,526	24,462	10,000
F. A. Shick, Comptroller	93,433	113,741	96,353	110,977	216,729	6,000
W. H. Tobias, Manager of Purchases	70,056	52,618	5,437	6,263	6,052	6,000
J. M. Ward, Vice Pres.	23,377	28,499	24,143	27,807	54,305	3,000
J. M. Gross, Vice Pres.	37,357	45,445	38,498	56,365	110,077	6,000
R. E. McMath, Vice Pres.	46,677	56,742	48,067	68,890	134,538	6,000
W. F. Hartmann, Treasurer	5,816	19,257	16,312	18,788	.....	10,000
C. R. Holton, Purchasing Agt.	5,816	19,257	16,312	25,051	48,923	10,000
J. M. Larkin, Asst. to Pres.	.....	.....	9,932	18,788	36,692	10,000
W. J. Brown, Treasurer, B. S. Corp.	.....	.....	.....	5,247	18,345	7,500
J. P. Bender, Treas. B. S. Corp. and other subsidiaries	.....	.....	.....	5,247	18,345	7,500
Total	1,750,498	1,793,855	1,489,972	1,766,199	3,425,306	.....

Explanation:—Mr. Lewis was a vice president until this spring when he resigned; Mr. Snyder is a former vice president; Mr. Bent is vice president in charge of blast furnaces; Mr. Johnston for many years was active vice president; Mr. Gross is vice president in charge of traffic matters; Mr. McMath is vice president in charge of finances.

he put at about $9,000,000, and the sum of $16,000,000 which appeared in connection with similar items on Bethlehem comparisons, was made for the purpose of "harmonizing" with Bethlehem's methods of bookkeeping. The "harmonizing" was done to afford a probable basis of comparison between Sheet & Tube and Bethlehem. This was the "grievous error" which rival auditors claimed to have found for the merger opponents in Bethlehem's accounts. Mr. McDonald claimed both sums came out of earnings and the difference came about only as to just where the items should find place in the annual reports.

Further attack was made against the voting of Sheet & Tube shares through trustees of estates by Eaton interests by summoning various local trust company officers. These included: Carl Ullman, assistant trust officer, Dollar Savings & Trust Co.; J. M. Ogram, trust officer, Commercial National bank; Edward McGowan, secretary, City Trust & Savings bank; and former Judge Charles F. Close, of Cleveland, who made a search of three estates in Hamilton county and failed to find a court order permitting the voting of Sheet & Tube shares held in trust although they were counted for the merger.

Shorten Work To Reduce Unemployment, Davis' Plea

Washington—"Too many 12-hour day and seven-day week industries still are to be found in this country," Secretary of Labor James J. Davis is quoted as saying. He called attention to a report of a survey by the bureau of labor in the Birmingham, Ala., district, referring especially to iron and steelworks. The report states:

"Payrolls of 16 iron and steel plants show that only 28 per cent of employes are on an eight-hour day; nearly 42 per cent on a ten-hour day, and 27 per cent on a 12-hour day. Forty-five per cent are on a six-day week basis; 32 per cent alternate, having a six-day week one week and then two seven-day weeks, while 22 per cent have a straight seven-day week, and most of these have the 12-hour day."

Secretary Davis pointed to this as an illustration of how unemployment might be reduced by shortening the work day and week.

Tractor Order Totals 12,000

(*Concluded from Page* 23)

tractors of various sizes, of which 5000 will be made in the Chicago district, it is announced. Others will be produced in the Milwaukee works. Delivery will be in December and February, next.

Elevated roadways like this one in New York furnish huge steel outlets

International News Photos.

Structurals Face Big Job To Turn Tide in Steel

EXPECTATIONS for improvement in the steel industry are largely predicated upon betterment in building. To date these have been partially realized. That a turn in the steel market nears is generally believed. That it will be increasingly manifest is the conviction of structural steel fabricators and producers. But actually it is only a hope, so far, since awards for the year to date are, and have been for two months, approximately 200,000 tons or 15 to 17 per cent behind the comparable period of 1929. To exceed last year's aggregate, bookings for the rest of 1930 must exceed 221,860 tons monthly.

Bargain Prices Stimulate

The trade's hopes for betterment seem based on three premises. First, weekly awards for three weeks have exceeded by a fair margin the weekly average for 1930 to date; second, present low prices for material and relatively low bids for fabrication and erection plus low money rates, encourage owners and contractors; third, inquiries are more numerous and in many cases are for larger lots than a year ago.

To what extent bargain prices will mature these pending projects and serve as a stimulant to the issuance of additional ones is, of course, problematical. It is apparent that attractive bids will exert a major influence in determining the trend of the structural market the next few weeks. That bargain prices were the deciding factor in pushing many large jobs and numerous small ones to conclusion the past three weeks is conceded.

Several jobs in the 4000 to 15,000-ton range in the East reached decision sooner than anticipated because of low costs. On a 4200-ton civic job in Cleveland, the bidding ran 25 per cent under cost estimates. The trade expects this development to continue, becoming increasingly pronounced at the time of the usual seasonal decline.

So hopeful are fabricators for the last half year, some say that notwithstanding the 200,000-ton lag to date, when final 1930 compilations are made the year will be found to exceed 1929.

200,000-Ton Handicap

What is necessary for fabricators to do to realize this ambitious program? As indicated above, to exceed last year's total awards based on STEEL's weekly compilations, average monthly lettings August to December inclusive must exceed 221,860 tons. First half of 1930 fell below first half of 1929 by 214,414 tons. Last half of 1929 totaled 1,-

(*Concluded on Page* 97)

Bethlehem Earnings Show Decline for Second Quarter

EARNINGS of Bethlehem Steel Corp., Bethlehem, Pa., for second quarter, after deducting all charges and dividends on preferred stock were equal to $1.86 per share on 3,200,000 shares of common, compared with $2.60 per share in first quarter 1930 and $5.33 per share on 1,880,000 shares for second quarter in 1929 .

Orders on hand June 30, 1930, were valued at $59,906,772, compared with $73,333,010 at the end of the previous quarter and $56,829,800 June 30, 1929.

Operation during second quarter averaged 69.3 per cent of capacity, compared with 80.8 per cent during first quarter and 100.6 during second quarter of 1929. Present rate of operation is about 55 per cent.

Comparison of earnings for second quarter with those of first quarter, 1930, and second quarter, 1929, is given in the accompanying table.

Look for Improvement

Eugene G. Grace, president, declared there is every indication that the steel business struck bottom early in July. He believes the low point was passed with regard to demand and prices and conditions at present are slightly better. There should be a normal picking up in August and September, which he hoped would be permanent.

He reported a sharp drop in the average billing price for second quarter, it being $1.49 per ton less than for first quarter. He said Bethlehem is not producing steel for stock purposes.

Mr. Grace said there had been no reduction in wage rates and none was contemplated. He said it would be false economy to attempt to meet the present situation through such action. The steel worker, he said, is already being forced to make heavy sacrifices in reduced working schedules. He estimated that Bethlehem workers were now receiving 60 to 65 per cent of last year's wages, which averagd $1942.

A seasonal pickup in railroad and structural buying is indicated. He also believed the steel industry was going to be materially aided by a gain in automotive operations. Shipbuilding is going forward at an excellent rate, with prospects encouraging.

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Wheeling Steel Corp., Wheeling, W. Va., and subsidiaries report net profit for the second quarter as $1,098,356, compared with $2,342,294 a year ago. Surplus June 30 was $17,211,748, against $17,173,541 April 1. Detail for the second quarter and first half of 1930 follow, with cents omitted:

	1930	
	Second quarter	First six months
Profit after federal tax	$4,033,685	$7,911,064
Less:		
Repair and maintenance	1,314,652	2,480,791
Balance	$2,719,032	$5,430,273
Deduct:		
Depreciation	$1,098,563	$2,174,674
Exhaustion of minerals	104,217	112,016
Interest and discount on bonds	417,895	792,001
Total	$1,620,675	$3,078,692
Net profit	$1,098,356	$2,351,580

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Minneapolis-Moline Power Implement Co., Minneapolis, farm equipment, more than earned its annual preferred dividend requirements in the first half year, according to W. C. McFarlane, president. This indicates net profits for the half exceeded $650,000. The company is beginning to reap benefits from the consolidation in May, 1929, of Minneapolis Threshing Machine Co. and Moline Implement Co., it is stated.

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Hamilton Bridge Co., Hamilton, Ont., for the first half year reports net profit of $247,606, compared with $260,796 in 1929. After preferred dividends and charges, $174,481 was left applicable to common dividends, compared with $163,015 a year ago. Current assets are $1,883,452 and liabilities $368,879.

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National Steel Car Corp., Montreal, Que., for the fiscal year ended June 30 reports operating profit of $1,803,791, against $602,229 for the preceding year. After deductions, surplus was $887,807, compared with $231,536 a year ago. Working capital June 30 was $1,555,689.

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Keystone Steel & Wire Co., Peoria, Ill., reports net income for the fiscal year ended June 30 of $585,909, equal to $2.20 a share on the common stock after deduction of preferred dividends. These earnings represent a sharp reduction from net income of $1,257,417, or $5.52 a common share reported for the year ended June 30, 1929. The reduction of earnings in the current year is ascribed to a decline in sales and highly competitive conditions in the barbed and woven wire markets.

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Crucible Steel Co. of America, New York, reports net earnings for the first half year of $2,317,772, adequate for both common and preferred dividends. The consolidated balance sheet shows current assets June 30 as $30,295,742 and current liabilities $4,591,341. Surplus June 30 was $29,632,928, compared with $29,564,875 last Dec. 31.

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Fairbanks, Morse & Co., Chicago, reports a net profit of $803,461 for the company and its subsidiaries in the six months ended June 30. This profit is after all charges, including depreciation, interest and federal taxes, and compares with $1,121,826 net in the first six months of 1929. Shipments for the period were $13,585,558, compared with $14,899,928 in the similar 1929 period. Total orders received from customers for the half year amounted to $15,009,737, against $18,004,026 for the similar period last year.

Lakeside Bridge & Steel Co., Milwaukee, fabricator and erector of steel, has increased capital from $500,000 to $1,000,000 to allow expansion.

Summary of Bethlehem's Second Quarter

	Second quarter 1930	First quarter 1930	Second quarter 1929
Total income, including subsidiaries	$13,025,558	$15,846,506	$18,069,082
Less interest charges	1,746,111	2,162,049	2,773,642
Balance	$11,279,447	$13,684,457	$15,295,440
Less depletion, depreciation and obsolescence	3,587,952	3,606,971	3,528,967
Net income	$ 7,691,495	$10,077,486	$11,766,473
Less—Dividends:			
Preferred stocks	$ 1,750,000	$ 1,750,000	$ 1,750,000
Common stocks	4,800,000	4,800,000	3,600,000
Total	$ 6,550,000	$ 6,550,000	$ 5,350,000
Surplus for period	$ 1,141,495	$ 3,527,486	$ 6,416,473

President Enlists Industries in Study of Unemployment

INDUSTRIES are asked by President Hoover to co-operate with the government in formulating a new plan for periodical and systematic determination of unemployment. The President has appointed a special fact-finding committee, drafting representatives of leading business and industrial organizations to work with the department of labor and the director of the census. The personnel has not yet been announced.

The inclusion of unemployment in the census taken in April gives the nation for the first time an accurate base on which to gage employment. The President points out that a similar house-to-house canvass every three months would cost the country $15,000,000 annually, a prohibitive sum.

Says New Basis Is Required

"On the other hand, it has been long recognized that the present department of labor statistics are inadequate, the cost of which is about $150,000 per annum," the President says. "In order to secure the information at reasonable cost we must find a new basis for recruiting it. Such a basis can only be formulated by the co-operation of industry, labor and other agencies."

Indicating the personnel of the committee, the President stated:

"The committee will be made representative of the American Federation of Labor, the United States Chamber of Commerce, the Manufacturers' association, the Industrial Conference board, the Railway Employes and other local organizations, the national Bureau of Economic Research, the Committee on Economic Changes and other economic bodies.

"Mr. Stuart of the department of labor and Mr. Steuart, director of the census, and a representative of the department of agriculture will be ex-officio members."

"Corrective Action" Demanded

Trade union organizations have been more insistent recently for government action. The Railway Labor Executives' association meeting in Cleveland July 25 demanded "corrective steps," without suggesting the steps. The President says the need for more systematic information on which to base intelligent action is generally recognized. Industries have been distributing work and combatting unemployment during the present depression more systematically and intelligently than ever before.

Cost of Living Drops with Weekly Wage Earnings

The cost of living in the United States fell a little faster in the first six months this year than did the average of weekly earnings in basic industries. The bureau of labor's average for the cost of living in 32 cities decreased 2.8 per cent, while weekly wage earnings declined 1.6 per cent.

Between June, 1929, and June, 1930, cost of living fell 2.1 per cent, while wage earnings dropped 3 per cent. The cost of living in June this year was 23 per cent below that of June, 1920, when prices making up the general index were at their peak. Weekly wage earnings in June, however, averaged only 8.3 per cent less than in June, 1920.

Wage earnings differ from wage rates and indicate amounts actually received by workers when engaged full time. The reduction in the cost of living has tended to ameliorate conditions for those finding only part-time employment.

Orders New Scrap Rates

Washington—Interstate commerce commission has found freight rates on scrap iron and steel, in carloads, minimum carload 50,000 pounds, in the Southwest unreasonable for the future to the extent they exceed 15 per cent of the corresponding first class rates prescribed in consolidated southwestern cases 123 I.C.C. 203. This was in the case of the Waste Material Dealers' Association of Arkansas against the Rock Island railroad. The commission prescribed reasonable alternative rates on scrap, carload minimum 75,000 pounds, not to exceed 12.5 per cent of the corresponding first class rates.

Movies, Radio Record Furnace's Passing

WITH a motion picture camera recording the event, and a celebrated radio announcer describing it, Furnace A of the Riverside works, Wheeling Steel Corp., Wheeling, W. Va., "went down for the count" recently. The stack, built in 1872 for Dewey, Vance & Co., an early Wheeling iron firm, was razed by means of dynamite. The furnace was 73 feet, 6 inches high; the diameter of the bosh 17 feet, 2 inches, and diameter of the hearth 13 feet, 6 inches. All its connections with stoves and other equipment were first severed with acetylene torches, and the skip assembly was cut off a few feet from the top. Superstructure, lining and bells were in place when the huge structure was toppled to earth. As a woodchopper makes his cut on the side he wants a tree to fall, so dynamite was used to remove the support from the stack, its weight causing it to fall in the desired direction, doing no damage to adjacent structures. Torches were then used to remove the steel from the old furnace. Stoves are being demolished with dynamite.

Pig Iron Rate in July Is Lowest in Six Years

PIG iron production in July experienced one of the most drastic liquidations in its history. Most startling of all was the net decline of 18 active blast furnace stacks, leaving only 144 of the country's potential 312 in blast July 31. This was the least number of stacks blowing since August, 1922.

The daily rate of pig iron production in July was 81,574 gross tons, the lowest since October, 1924. The July rate was a decline of 16 per cent from the 97,817 tons of June and compared with 122,016 tons last July. For seven months of 1930 the average daily pig iron output has been 98,271 tons, compared with an average of 115,808 tons for all of 1929.

AVERAGE DAILY PRODUCTION

	1930	1929	1928	1927
Jan.	91,573	110,742	92,113	100,043
Feb.	101,640	114,942	99,954	105,021
Mar.	104,930	119,662	103,199	112,326
Apr.	106,371	122,106	106,066	114,146
May	104,564	125,753	106,219	109,388
June	97,817	123,887	102,745	102,991
July	81,574	122,016	99,120	95,311
Aug.	.....	120,845	101,193	95,183
Sept.	.....	116,548	102,120	92,750
Oct.	.....	115,747	108,824	90,710
Nov.	.....	106,081	110,155	88,728
Dec.	.....	91,513	108,702	87,039
Ave.	98,271	115,808	103,365	99,422

Total production of pig iron in July was 2,528,784 gross tons, against 2,934,508 tons in June and 3,782,511 tons last July. For seven months of 1930 pig iron production has been 20,833,398 tons, compared with 25,420,048 tons in the comparable period of 1929 and 21,583,174 tons in the like period of 1928.

MONTHLY PRODUCTION

	1930	1929	1928
Jan.	2,838,751	3,433,028	2,855,515
Feb.	2,845,937	3,218,376	2,898,668
Mar.	3,252,822	3,709,518	3,199,175
April	3,191,119	3,663,167	3,181,975
May	3,241,477	3,898,344	3,292,790
June	2,934,508	3,715,104	3,082,340
July	2,528,784	3,782,511	3,072,711
Total 7 mos.	20,833,398	25,420,048	21,583,174
Aug.	.....	3,746,198	3,136,995
Sept.	.....	3,496,454	3,063,593
Oct.	.....	3,588,146	3,373,539
Nov.	.....	3,182,420	3,304,656
Dec.	.....	2,836,917	3,369,784
Total	.....	42,270,183	37,831,741

July production is broken up into 540,566 tons of merchant and 1,988,218 tons of nonmerchant iron.

Relating operations to potential capacity, July was a 57.8 per cent month, compared with 69.3 per cent for June and 87.2 per cent for July, 1929.

As previously noted, the number of active blast furnace stacks July 31 was 144, compared with a revised 162 for June 30. The greatest losses in active stacks were sustained in Ohio, Pennsylvania and New York. Many of the stacks now technically out of production are banked, available for speedy resumption when market conditions warrant.

RATE OF OPERATION

(Relation of Production to Capacity)

	1930†	1929*	1928‡
January	65.0	79.0	66.8
February	72.1	82.2	72.5
March	74.5	85.5	74.8
April	75.4	87.4	76.8
May	74.2	89.8	77.0
June	69.3	88.5	74.4
July	57.8	87.2	71.8
August	.....	86.4	73.3
September	.....	83.3	74.1
October	.....	82.6	78.9
November	.....	75.8	79.8
December	.....	65.5	78.8

†Based on capacity of 51,490,790 tons Dec. 31, 1929; *on capacity of 51,069,895 tons; ‡on capacity of 50,329,750 tons. Capacities by American Iron and Steel institute.

Farm Tools Inc. Is Formed

Merger of five companies in Ohio, Indiana and Illinois into a $4,000,000 farm equipment corporation to be known as Farm Tools Inc. is announced by Richard Rosencranz, president, Vulcan Plow Co., Evansville, Ind. Besides the Vulcan company, other firms included in the new corporation are the Roderick Lean Mfg. Co., Mansfield, O.; Roderick Lean Mfg. Co. of Indiana, at Evansville; Hayes Pump & Planter Co., Galva, Ill.; and Peoria Drill & Seeder Co., Peoria, Ill.

JULY PIG IRON PRODUCTION

	No. in blast last day of month		Total tonnage made	
	July	June	Merchant	Nonmerchant
Ohio	33	36	84,910	536,724
Pennsylvania	48	53	82,918	753,943
Alabama	14	14	114,780	77,222
New York	9	13	84,422	65,426
Illinois	13	15	109,131	166,842
Colorado	1	2		
Indiana	9	11		
Maryland	4	4	21,597	315,307
Virginia	1	1		
Wisconsin	0	0		
Kentucky	1	1		
Massachusetts	1	1		
Tennessee	0	1		
Utah	1	1		
West Virginia	3	3		
Michigan	4	4		
Minnesota	2	2	34,859	48,924
Missouri	0	0		
New Jersey	0	0		
Spiegel and ferro—all states	....	....	7,949	23,830
Total	144	162	540,566	1,988,218

Construction Conference Formed To Spur Building

Chicago—To further organize and co-ordinate agencies of the building construction industry, a permanent organization known as the National Conference on Construction was organized in Chicago at a meeting July 30 attended by 20 leaders of the building industry and allied financial groups. One of the aims of the organization is to make the building industry's efforts less scattered so that in the future building work may function more smoothly.

Secretary of Commerce Lamont had been scheduled to preside, but in his absence Julius H. Barnes, chairman of directors of the United States chamber of commerce, and chairman of the national building survey conference, called at the suggestion of President Hoover last year, was in charge. The new organization is a development of the Hoover program and is intended to bring the 67 branches of the building industry into co-operation for quicker results than were evidenced in the recent months of business depression. Mr. Barnes was named permanent head of a committee, which was empowered to complete arrangements for the final organization.

Among those in attendance were Benjamin F. Affleck, president of the Universal Portland Cement Co., and W. M. Wood, Decatur, Ill., president of the Mississippi Valley Structural Steel Co., and former president of the American Institute of Steel Construction.

A statement following the meeting declared that "the conference will be for the purpose of reviewing the outstanding common problems of the business and other interests identified with construction, to determine upon a program of activities, including actual studies of such problems, and agreeing upon recommendations looking toward the solution of the problems."

Plans Warren Slag Plant

Standard Slag Co., Youngstown, O., has completed plans for a slag crushing plant at the Trumbull Cliffs blast furnace at Warren, O. Heretofore the company has shipped slag from this stack to its Youngstown plant.

Industrial Men in the Day's News

Clifford D. Caldwell, President, Interlake Iron Corp.

EXPERIENCE in coal and coke in the South was expanded into a wider experience with by-product coke at Chicago, and this fits him for entry into the iron business.

BEGINNING with the By-products Coke Corp. in 1914, he four years later became vice president and since 1921 has been president.

DURING the war he served on the committee of coal production of the National Council of Defense. He holds a large number of directorates.

BANKING, coal and coke, by-product coke and finally iron and steel furnished the four avenues down which Clifford D. Caldwell has traveled in his march toward the success he now can be said to have achieved. Late last year he was chosen president of the Interlake Iron Corp., now the largest merchant pig iron interest in the United States, combining Toledo Furnace Co., By-products Coke Corp., Perry Iron Co., Zenith Furnace Co., and certain ore and coal properties.

Born at Bristol, Tenn., Oct. 16, 1872, Mr. Caldwell obtained his higher education at King college there. Leaving school in his junior year, he started to work at the First National bank of his home town, resigning in 1895 to enter the coal business. He continued in coal and coke until 1914, principally looking after his own interests. That year began his identification with the By-Products Coke Corp., Chicago. He was elected vice president in 1918, and in 1921 was made president.

Mr. Caldwell was instrumental in organizing Steel & Tube Co. of America, now part of Youngstown Sheet & Tube Co., and also was associated with interests in Interstate Iron & Steel Co., Chicago, being a director until its absorption by Central Alloy Steel Corp., Massillon, O., now part of Republic Steel Corp.

At present he is vice president and director, Pickands, Brown & Co., and Black Mountain Corp. He is director of Continental Illinois Bank & Trust Co., Chicago Short Line Railway Co., Kingston Land Co., and Kingston-Pocahontas Co., and is finance committee member and director, Consumers Co., and various other affiliates.

During the World war Mr. Caldwell served on the committee of coal production, National Council of Defense. He is a member of American Academy of Political and Social Science, life member of New England Genealogical society. He also holds membership in Virginia Historical society, Field Museum of Natural History, Art Institute of Chicago and Civil Legion, as well as numerous clubs. His principal interest outside of business is travel and one of his hobbies is the hunting of big game.

FRED C. YOUNG has been appointed general manager of sales, Union Drawn Steel Co., Beaver Falls, Pa., subsidiary of Republic Steel Corp., Youngstown, O. Mr. Young has been with Union Drawn company for 16 years, including four years at the Detroit district office and nine years at the Cleveland district office. In August, 1928, he became assistant general manager of sales of the company and now succeeds, George Mitchell, who recently resigned as vice president in charge of sales of the Union Drawn company.

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C. T. Connelly, Detroit, formerly representative in Michigan territory for the Independent Pneumatic Tool Co., Chicago, has been appointed manager of its Buffalo office.

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E. C. Gainsborg, formerly Pittsburgh representative of S. K. F. Bearing Co., subsidiary of S. K. F. Industries Inc., Hartford, Conn., has been appointed Pittsburgh district manager, Cleveland Crane & Engineering Co., Wickliffe, O.

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Victor Stobie, a member of the Institute of British Foundrymen since 1912, and who served as president of the Newcastle, England, branch of the society in 1927-8, has been elected junior vice president of the institute.

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J. S. Besser, formerly district sales agent, Colorado Fuel & Iron Co., Denver, in charge of Kansas terri-

tory with headquarters at Wichita, Kans., has been appointed assistant manager of sales at Denver to succeed the late William H. Beattie.

F. C. Crotts has been appointed district manager of sales at Wichita, to succeed Mr. Besser.

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George S. Case has ben named president of Peck, Stowe & Wilcox Co., Southington, Conn., manufacturer of machines and tools.

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J. E. Manchester has succeeded Jack Hammond in charge of sales for Machine Tool & Supply Co., Tulsa, Okla.

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T. C. Sherman, Cleveland manager of alloy steel sales, Ludlum Steel Co., Watervliet, N. Y., has been appointed assistant to the president, effective Sept. 1. His headquarters will be at Watervliet.

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Maj. Aaron E. Carpenter, first vice president, E. F. Houghton & Co., Philadelphia, manufacturer of oils and leathers for industries, recently returned from an extended business survey in France, Germany, Poland, Russia and England.

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James B. Armstrong, 1 East Forty-second street, New York, has been appointed sales representative in New York for Reading Steel Casting Co. Mr. Armstrong continues to represent the Lebanon Drop Forge Co. and other accounts.

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William Piez, brother of Charles Piez, chairman, Link-Belt Co., Chicago, has been appointed European correspondent of the company. Since September, 1928, when he resigned as district manager, Concrete Steel Co., Chicago, Mr. Piez has resided in Paris. His headquarters will be at Hotel Lutetia, 43 Boulevard Raspail, Paris, France.

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Paul R. Clark, formerly president, Fireproof Products Co., has been appointed New York district manager, Genfire Steel Co., Youngstown, O., with offices at 31 Union Square, New York, and 605 Broad street, Newark, N. J. Mr. Clark previously was sales manager, General Fireproofing Co., Youngstown, going to New York in 1917, when the Fireproof Products Co., was organized.

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Ralph L. Dowdell, senior metallurgist, bureau of standards, Washington, has resigned to become professor of metallography at the University of Minnesota in September. He previously was connected with the university, from which he was graduated in 1918, as instructor and later as assistant professor of metallography. He received the 1928 Howe medal award of the American Society for Steel Treating.

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Shirley S. French, former president, Berger Mfg. Co., Canton, O., and vice president, treasurer and director, Central Alloy Steel Corp., has become associated with Lyon Metal Products Inc., Aurora, Ill., in general charge of a new division of that company. Mr. French severed his former connections as noted in IRON TRADE REVIEW of May 8, upon the merging of Central Alloy into Republic Steel Corp.

J. S. Sprott, former manager of sales, Berger Mfg. Co., is also to be affiliated with Lyon Metal Products Inc., in charge of sales of the new division, which will market a line of products to be announced in the near future.

Fred C. Young

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H. R. Gram, with Seneca Iron & Steel Co., Buffalo, for ten years, the last five at its New York office, has been appointed district manager of sales in the eastern territory with headquarters at 3314 Chrysler building, New York. He succeeds F. B. Keith, transferred to other duties.

Walter I. Wilson, formerly at the home office, is being transferred to New York territory.

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George W. W. Cornman, treasurer and manager, service department, Brown Instrument Co., Philadelphia, retires Aug. 8. The service department will thereafter be in charge of R. C. Kennan as manager and E. T. Nahill as field supervisor.

Mr. Cornman has been affiliated with the industrial instrument industry for 35 years, formerly being secretary-treasurer, Keystone Electrical Instrument Co. When that organization was absorbed by the Brown company, he became treasurer urer and service department head.

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Leon E. Thomas has resigned as president, Reading Iron Co., Reading, Pa. At a special meeting of stockholders July 31 the office of chairman of the board was created and A. J. Maloney, president, Philadelphia & Reading Coal & Iron Co., of which Reading Iron is a wholly owned subsidiary, was elected to fill it. He will assume the executive duties of president until a successor to Mr. Thomas is appointed.

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E. C. Wilson, formerly in charge of the pricing group, gear and reducer division, Foote Bros. Gear & Machine Co., Chicago, was recently appointed assistant sales manager. Until 1929 Mr. Wilson was assistant sales manager of R. D. Nuttall Co., Pittsburgh.

Francis A. Emmons, vice president, Foote Bros. company, recently returned from a business trip to the Pacific Coast.

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Everett Chapman has been appointed director of development and research, Lukenweld, Inc., division, Lukens Steel Co., Coatesville, Pa. He will direct laboratory and investigation work in connection with redesigning of machinery parts for welded steel type of construction.

Following graduation from the University of Michigan in 1924, Mr. Chapman attended Purdue university for a year, and then became director of research, Lincoln Electric Co., Cleveland. While with that company he invented the electronic tornado welding process.

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Dr. C. H. Lorig, professor of mechanical engineering in charge of metallurgical courses, Drexel institute, Philadelphia, has become affiliated with the technical staff, Battelle Memorial institute, Columbus, O., where he will study foundry and general metallurgical problems. He had previous experience with Wisconsin Steel Co., Wisconsin Appleton Co., French Battery Co., Laddish Drop Forge Co., and at the University of Wisconsin.

Samuel Epstein resigned as research metallurgist, Illinois Steel Co., Chicago, to become metallurgist at Battelle institute, in charge of research on embrittlement of steel.

Leland H. Grenell, identified with Ingersoll-Rand Co., bureau of mines, bureau of standards, and Frigidaire Corp., has become identified with the research staff of Battele institute. He will conduct a sponsored

research on production and utilization of metal foils.

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James S. Fenton has been promoted to sales engineer, New York office, Reliance Electric & Engineering Co., Cleveland.

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H. Le Roy Replogle, for many years in the steel trade at Johnstown, N. Y., and a brother of the former head of the Replogle Steel Co., has joined the Boston office of the Warren Foundry & Pipe Co.

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Norman B. Wood, Madison, Wis., has become production manager of Metal Ware Corp., Two Rivers, Wis. Mr. Wood was formerly associated with French Battery Co. and the Automobile Radio Corp. at Madison.

Obituaries

WILLIAM A. McGONAGLE, 69, president of the Duluth, Missabe & Northern railroad, subsidiary of the United States Steel Corp., and acting head of the Duluth & Iron Range railroad, died Aug. 2. Mr. McGonagle, one of the Northwest's distinguished figures, began a long railroad career as transit man on the Northern Pacific railroad. At 20 he was an assistant engineer of the same line. Subsequently he served in various capacities with the Duluth & Iron Range and Duluth, Missabe & Northern railroads, becoming president of the latter in 1909. Mr. McGonagle was a past grand master of the masonic fraternity of Minnesota.

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Walter S. Bickley, 63, former president of the Penn Steel Casting Co., Chester, Pa., died recently.

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Ellis Frank Muther, 51, sales manager of Gisholt Machine Co., Madison, Wis., from 1914 to 1924, and general sales manager, Gardner Metal Works, Chicago, for the past four years, died July 27. Mr. Muther was a graduate of Lewis Institute of Technology.

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James K. Cullen, 77, president of the Niles Tool Works Co., Hamilton, O., died in Hot Springs, Ark., Aug. 1. He was at one time president of Niles-Bement-Pond Co. Mr. Cullen was a prominent civic leader in Hamilton, O., where he spent the greater part of his life.

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Charles C. Bolton, 75, capitalist and philanthropist of Cleveland, died July 31. He was graduated from Harvard university in 1877, and then became identified with Rhodes & Co., later the M. A. Hanna Co., Cleveland. He was one of four members of the firm for many years, until he retired in 1904. He was a former director of the Bourne-Fuller Co., now a part of Republic Steel Corp.

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Frank J. Oakes, 54, general superintendent, Dodge works, Link-Belt Co., Indianapolis, died July 19. He entered the service of the Link-Belt Co. in 1894. Except for one year, 1899, he spent his entire business career with the company as repairman and general machinist, assistant foreman in the sheet and structural iron department, machine shop foreman and tool room superintendent, and latterly, general superintendent, the position he held until his death. He was an authority on mechanical engineering and during the war served as designer and advisor on munitions manufacture.

Complete Iron, Steel Imports for June Show Loss from May

BECAUSE the revised tariff was effective at midnight, June 17, statistics for imports from June 18 to June 30 were omitted from the department of commerce's compilation of June foreign trade statistics, presented on page 27 of STEEL for July 31.

The June 18-30 imports are now given by the department as 19,636 gross tons, giving June a total of 48,955 tons imported, compared with 52,814 tons in May and 63,635 tons in June, 1929.

First half year imports stand at 295,688 gross tons, against 357,930 tons a year ago. Imports in the first half were barely one fourth the exports of 1,225,001 tons.

The chief product imported during the last 13 days of June was structural shapes, receipts of which totaled 5705 tons, chief supplier being Belgium with 4822 tons. Next in tonnage stands ferromanganese and spiegeleisen, of which 5222 tons were imported. Receipts of pig iron were 1547 tons and merchant steel bars amounting to 1362 tons were the fourth largest item.

The chief source of supply was Belgium, which exported to us 6925 tons of iron and steel products, followed by Canada with 4478 tons.

IMPORTS AND EXPORTS
Gross Tons

	—1930—		—1929—	
	Imports	Exports	Imports	Exports
Jan.	42,314	225,090	54,793	274,296
Feb.	43,351	197,426	58,146	259,711
Mar.	55,604	238,333	52,747	270,925
April	52,650	208,640	54,337	277,580
May	52,814	196,120	74,272	261,516
June	48,955	159,392	63,635	247,811
Total (6 mos.)	295,688	1,225,001	357,930	1,591,839
July	.....	.....	71,378	270,532
Aug.	.....	.....	83,969	242,856
Sept.	.....	.....	60,974	222,408
Oct.	.....	.....	63,226	247,646
Nov.	.....	.....	54,041	241,829
Dec.	.....	.....	47,486	215,242
Total	.....	.....	739,004	3,032,352

IMPORTS OF IRON AND STEEL PRODUCTS
Gross Tons

Item	June 18-30 1930	June 1-17 1930	May 1930
Pig iron	1,547	5,242	13,891
Sponge iron	5		
Ferromanganese and spiegeleisen (1)	5,222	2,374	4,781
Ferrochrome (2)	.....	57	.....
Ferrosilicon (3)	367	465	742
Other Ferroalloys (4)	.....		
Scrap	1,061	1,607	1,749
Steel ingots, blooms, billets, etc.	648	809	1,117
Concrete bars	38	987	3,101
Hollow bar and drill steel	32		
Merchant steel bars	1,362		
Iron slabs	85	42	62
Iron bars	10		
Wire rods	181	774	490
Boiler, other plate	.....	407	.....
Sheets and skelp	792	2,763	1,558
Tin plate	10	28	11
Structural shapes	5,705	7,791	19,640
Sheet piling	.....		
Rails, fasten.	63	103	467
Cast pipe, fittings	509	1,804	342
Welded pipe	277	1,916	1,587
Other pipe	128		
Barbed wire	96	272	283
Round iron, steel wire	106	322	829
Telegraph wire	.....	1	1
Flat wire, strip	21	75	110
Wire rope, strand	132	208	248
Other wire	9	25	5
Hoops and bands	906	666	2,098
Nails, tacks, staples	263	453	229
Bolts, nuts, rivets	2	21	59
Horse, mule shoes	.....	7	1
Castings, forgings	59	100	164
Total	19,636	29,319	53,565

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.
(4) Class not shown prior to June 18, 1930

Here and There in Industry

MIDLAND STEEL PRODUCTS CO., Cleveland, has acquired all rights under American and foreign patents covering airbrakes for automobiles, airbrakes and starters for airplanes and boosters for all styles of brakes from Niels Anton Christensen, their inventor. Development will be undertaken at once on airbrakes for a variety of purposes, at the Cleveland plant. Mr. Christensen will be associated in an engineering capacity. This acquisition enlarges the company's participation in the automobile field and its entry into that of aviation.

□ □ □

American Steel Products Co., Macomb, Ill., poultry equipment, has purchased additional property near its plant for expansion.

□ □ □

Carson Machine Works, Oklahoma City, Okla., has changed its name to Carson Machine & Supply Co. A. H. Carson is president and manager.

□ □ □

Gopher Thresher Mfg. Co., Minneapolis, has purchased the motor plant of the former Pandolfo Mfg. Co., St. Cloud, Minn.

□ □ □

Variety Tool & Metal Stamping Co., 217 Centre street, New York, has changed its name to Universal Metal Products Co.

□ □ □

South Milwaukee, Wis., plant of the Bucyrus-Erie Co. is working on about the same basis a year ago, with 1750 employes, and 52 hours a week scheduled.

□ □ □

Pratt & Whitney Co., Niles-Bement-Pond Co. division, Hartford, Conn., has moved its Los Angeles sales office to 2034 Santa Fe avenue. Harry G. Hill is manager.

□ □ □

American Tank & Equipment Corp. is the new name for American Tank Co., Oklahoma City, Okla., a subsidiary of Black, Sivalls & Bryson Inc.

□ □ □

Fleetwood Body Corp., Fleetwood, Pa., subsidiary of General Motors Corp., whose operations recently were transferred to Detroit, will sell its plant at Fleetwood.

□ □ □

Wilson Welder & Metals Co., Hoboken, N. J., has moved its offices and plant to its new building at 956-970 Thirty-eighth street, west of Bergen turnpike, North Bergen, N. J.

□ □ □

Poole Engineering & Machine Co., Baltimore, has appointed Neil Otey, formerly from the main office at Baltimore, district manager of its Pittsburgh office, with headquarters at 245 Union Trust building.

□ □ □

Pennsylvania Foundry Supply Co., 1211 Chestnut street, Philadelphia, has moved its New England warehouse and office from 423 East Eighth street to 310 Congress street, Boston.

□ □ □

Washington Machinery Co., Spokane, Wash., is absorbing several subsidiary companies under its name and is increasing capital from $100,000 to $300,000 to cover its expansion.

□ □ □

American Stove Co., St. Louis, Louis Stockstrom president, has consolidated its six sales organizations into one, with seven divisions. Headquarters of the southwestern division are at 825 Chouteau avenue, St. Louis, in charge of R. L. Kahle.

□ □ □

John Wood Mfg. Co., Conshohocken, Pa., has established a branch factory at 1246 East Twenty-fifth street, Los Angeles, in charge of J. F. Dunn. The company manufactures water heaters, range boilers, underground steel tanks and similar products.

□ □ □

Thompson Products Inc., Cleveland, aeronautic division, has received valve orders from Pratt & Whitney Aircraft Co., Hartford, Conn., during the past month totaling nearly $100,000. The most recent consignment was for 8500 valves for motors being built for the government.

□ □ □

Tesch Mfg. Co., Milwaukee, recently organized by W. C. Tesch to manufacture a new automatic saw filer, has leased part of the Milwaukee Welding Works plant, 57 Twenty-seventh street, where it will carry on its initial production, beginning immediately. John H. Spicer is vice-president.

□ □ □

Despatch Oven Co., Minneapolis, manufacturer of industrial ovens, has reorganized its office at Chicago and has made W. S. Appleton district sales representative. In conjunction with J. H. Hopp, he will manage sales of industrial ovens. Other products will also be handled by this office.

□ □ □

Birmingham Galvanizing Co., Birmingham, Ala., is operating its plant 24 hours a day. It has a government order for half a million special anchor bolts and nuts for river revetment work. It also has large orders for substation and electric line pole hardware and fencing and markers for airports.

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Ferro Enamel Corp. has been formed at Cleveland by merger of the Ferro Enameling Co., manufacturer of enameling materials, and Ferro Enamel Supply Co., which markets these materials and designs and erects plants for porcelain enameling. Consolidation will not affect officers of the component companies or sales and service branches.

□ □ □

Chapman-Stein Co., Mt. Vernon, O. has taken a contract for five four-hole soaking pits for a steel company in the Calumet district at Chicago. They are one-way fired, with refractory tile recuperators. Coke oven gas will be burned. This contract brings total holes of one-way fired type to 68, most of which have been built in the past two years.

□ □ □

Bethlehem Steel Co., Bethlehem, Pa., has contracted with the Koppers Construction Co., Pittsburgh, for replacement of coke oven equipment at the former's Lackawanna by-product plant. The work involves rebuilding of a number of benzol treating units and is said to involve up to $10,000,000. The program will require three to four months for completion.

□ □ □

Ruselite Co., Milwaukee, affiliated with the Milwaukee Die Casting Co., which is building a plant to house both companies, has started production on a chromium-molybdenum-aluminum alloy. It has a considerable order from Majestic Household Utilities Corp., affiliated with the Grigsby-Grunow Co., Chicago, for use in its household electric refrigerators.

□ □ □

Wheatley Bros. Foundry & Machine Co., Tulsa, Okla. is now in production at its new plant on Sand Springs road. New buildings completed include machine shop, 85 x 160 feet, and brass foundry, 40 x 85 feet. Company manufactures oil field pipeline and production equipment, including an all steel gate valve. Thomas Wheatley is vice-president and general manager.

□ □ □

Hartford Steel Car Co., Hartford, Wis., has been organized by Milwaukee and Hartford interest to manufacture steel cars, trailers and trucks for steam and electric railways. The capital stock is $250,000 and the in-

corporators are D. L. McWilliams, 123 Wisconsin avenue, Milwaukee, Margaret McWilliams and George C. Widule. Contracts have been let and work started on the first Hartford unit, 70 x 120 feet, with a 32 x 40-foot office wing. The general contractor is Raymond Sheridan, 4500 State Street, Milwaukee.

□ □ □

Bodine Ice Machine Co., Springfield, Mo., has taken over the Springfield plant of United Iron Works and will utilize it for the manufacture of ice making machinery.

□ □ □

R-F Electrical Mfg. Co., Shawnee, Okla., has completed removal of its offices and plant from Augusta, Kans. Its Shawnee plant is now engaged in manufacture of electric generating and oil field equipment. O. C. Jones is general manager.

□ □ □

Union Iron & Machine Works, Seminole, Okla., has enlarged its shop by installation of special jig machinery for reclaiming oil field engine valves. A special department has been added for this work.

□ □ □

Dominion Alloy Steel Corp., Toronto, Ont., W. J. Boyd, president, reports business for the past three months has shown a 20 per cent increase over the corresponding period of last year. The plant, with capacity of 1500 tons per month of galvanized sheets, has been working 24 hours a day and has orders sufficient for three months. A 300-foot addition has been built and additions to equipment will increase production to 2500 tons per month.

□ □ □

Moise Steel Co., 454 Virginia street, Milwaukee, jobber of sheet steel, is starting work on a new plant and warehouse, 77 x 247 feet, at Thirty-fifth avenue and Scott street; cost is about $50,000. L. R. Moise is president and general manager.

□ □ □

Milwaukee Gear Co., 1222 Third street, Milwaukee, is taking preliminary estimates on the cost of building a new plant at 625 South Pierce street, but may not begin actual construction work until early in 1931. Emil G. Borisch is president and general manager.

□ □ □

Republic Steel Corp., Youngstown, O., has opened an office at Milwaukee in the First Wisconsin National Bank building, in charge of N. E. Nelson.

□ □ □

Crane Co., Chicago, is taking bids after Aug. 13 through Architects M. Tullgren & Sons Co., 20 Prospect avenue, Milwaukee, for a showroom, office, warehouse, garage and pipe shed at Capitol drive and the Milwaukee railroad. The main building will be 2-stories, 74 x 200 feet; the pipe shed, 60 x 100 feet, and the garage, 36 x 40 feet, and the cost is estimated at $150,000. The present Milwaukee branch occupies leased quarters at 100 Second street. E. M. Faul is branch manager.

□ □ □

B. & L. Co., Fond du Lac, Wis., has been organized by C. H. Brugger and Charles F. Larzelere to manufacture a line of sportsmen specialties. A shop has been opened in the Longdin & Brugger factory. Corrosion-resisting steel will be used exclusively.

□ □ □

Hoth Hay Mower Co., which moved into plant and offices from Postville, Ia., to Chippewa Falls, Wis., several months ago, is installing new equipment and will add a line of snow fencing, principally for the municipal, county and state highway commission market.

□ □ □

Cutler-Hammer Inc., Milwaukee, has taken over the Reynolite divison of the Reynolds Spring Co., Jackson, Mich., which will become a subsidiary. The division manufacturers bakelite flush plates, plural plugs and similar products.

□ □ □

Chicago Bridge & Iron Works, Chicago, has opened a district sales office at Tulsa, Okla., in charge of D. A. Leach, formerly in the New York office. His headquarters are at 330 Exchange Bank building.

Canadian Election To Bring Higher Tariff

Toronto, Ont.—Still higher duties on imports of iron and steel products from the United States are expected this fall as a result of the victory of Richard B. Bennett and his Conservative party in the recent Canadian election.

Retiring Prime Minister Mackenzie King already had made effective countervailing duties on certain products, as an offset to the higher American tariff effective June 17. In his campaign, Mr. Bennett proposed further increases, and it is expected they will be enacted prior to Sept. 30.

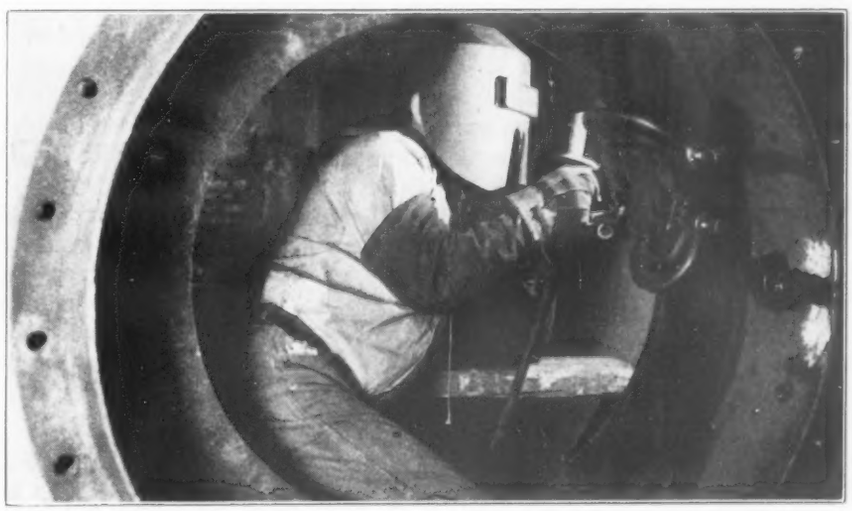
The policy of the new Conservative government will be, "The British Empire first, and within the British Empire Canada first." In other words, a duty is to be levied on imports of products which Canada herself can supply, but if Canada cannot supply them, then British manufacturers get preference over Americans.

Relatively, some of the handicap of American manufacturers will be removed, as British imports now pay no duties and American imports heavy ones, while under the new basis British imports of products also manufactured in Canada will be subjected to duties.

Important expansion of facilities is now under way at the Algoma Steel Corp., Saulte Ste. Marie, Ont., and other Canadian plants, while the old British Empire Steel Corp., operating chiefly in Nova Scotia, has been reorganized.

United States Steel Corp., through its Canadian subsidiary, has moved its wire plant from Hamilton, Ont., to Ojibway, across from Detroit, and enlarged it, and has a tin plate plant under construction at Ojibway.

Dominion Bridge Co. recently placed in England 2500 tons of steel required for the construction of penstocks for the Powell River Co., Vancouver, B. C. It is stated the penstocks for other Canadian paper mills have been made from Pittsburgh steel.



THE "MAGIC FLAME" IN A CONSTRUCTIVE MOOD

No, this is not a picture of a welding operation taken through a ship's porthole. The workman is inside a large circuit breaker, which is being welded at the Schenectady, N. Y., plant of the General Electric Co.

EDITORIAL

Land Transportation Has More Market Possibilities

RAILROADS this year are likely to retain their position as leading consumers of steel. For several years they have run a close race with the automotive industry which passed them for the first time in 1928 and then fell back to second place in 1929. A wager on the railroads to win again not only would be safe, but some odds also might be offered, for they may increase the lead by which they won last year. If the railroads do not show the brilliant bursts of speed which sometimes distinguish their rival neither do they slow up so suddenly when the economic track is not fast. They are the more consistent performers, and therein is the chief assurance of their staying qualities in an "off" year.

Steel tonnage for the railroads does not sway from one extreme to the other. The very stability of the demand from that source discourages the hope or expectations of a large increase in the near future. Heavy rails and equipment have superseded the lighter types. Railroad proficiency has increased at a more rapid pace than the consumption of steel for rails and cars. In a dull period Class I roads have nearly a half million surplus freight cars immediately available for service.

That railroads have reached a plateau in steel demand is indicated by the fact their consumption last year was but 17 per cent more than in 1922, and the 1929 figure was practically the same as the average of the preceding seven years. Automotive steel demand in the same period has tripled. The comparison might mislead us if we did not know that the railroads in the past eight years consumed 57,570,000 tons of finished steel, while the automotive industry took only 35,650,000 tons; and the railroads still lead in yearly tonnage.

Railroads Are Business Stabilizers

More than half their requirements are for rails and track fastenings, with comparatively little variation in yearly volume. Freight car orders, the next largest item in the railroad list, show a decrease so far this year of 36 per cent from the comparable period last year. The decline in the number of automobiles and trucks produced is 30 per cent, and there is slight chance that more units will be made in the last six months of this year than in the first. A larger proportion is comprised of the lighter type of cars. Taking all factors into consideration the apparent margin for steel consumption in favor of the railroads this year will be 1,000,000 tons, whereas in 1929 the railroads led by only 340,000 tons.

For the railroads to retain steel leadership against increasing competition from many sources is reassuring. When competitors win it generally is with less steel. Buses are taking their passengers; trucks, their freight, Recently it was estimated that the use of 275,000 tank cars is jeopardized by the increase in pipe lines. While here the loss in tonnage is offset partially by a gain in steel demand for pipe lines, inevitably the debit for cars must be permanent, as pipe lines are more durable than freight cars. The railroads have had much to contend with, and as a mainstay and stabilizer of steel consumption they are entitled to consideration.

Billions for Road Improvement

The railroads are not receiving any such encouragement as that which the three billion dollar annual expenditure for road improvement must be to bus lines and the automotive industry. Granted that a large share of the cost of road improvement comes out of the pockets of the "motoring public," and that it will continually increase the use of finished steel for automotive purposes, highway improvement itself does not absorb directly more than 400,000 tons. Out of an expenditure of a billion dollars for road work by the 48 states in the past year only $18,000,000 went for equipment and machinery.

Steel has offered practically no serious competition to other materials in highway construction, though this is one of the largest and fastest growing material markets in the country. Old methods of roadbuilding are proving inadequate, as the frequency of repairs and replacement shows. The tendency has been to skimp on the use of reinforcing steel, whereas it should be and can be increased.

Various needs of land transportation call for 40 per cent of finished steel output, while road work into which the country is pouring billions of dollars, absorbs less than 1.5 per cent of the steel. It is time that construction and market possibilities be studied more diligently; we have been too prone to say "road work does not take much," and letting it go at that.

How Industry Is Greeting STEEL

Although This Is the Sixth Issue of this Publication under the New Name STEEL, Comments from Readers Still Continue To Pour in

"Progressive Activities"

"We are quite confident that your progressive activities will only result in an increased high regard and respect for your publication.

"It is needless to say that our entire organization joins in extending you our compliments and expressing the confident hope that continued success will rest on all your activities."

He Likes Ads in Editorial Section

"We have been subscribers of *Iron Trade Review* for the past ten years and since you have changed to name to STEEL we have been recently noting a number of criticisms and congratulations which you have been publishing.

"While we are not technical or expert when it comes to criticising make-up, etc., of a trade publication, we are just plain readers who use your publication for what we feel is the most we get out of it.

"We feel that back of the change to the name STEEL and the rearrangement of paper a tremendous amount of thought and work was put forth and we feel that all of this was for the decided improvement of your paper. We like to read both editorial and technical articles and furthermore we are keen readers of advertisements and we like the way they are arranged. Reading advertisements keeps us in touch with what is going on and in some well written advertisements in your publication in a few minutes we can get more good information boiled down than by reading some lengthy article on the subject elsewhere.

"Accept our congratulations."

"I. T. R. Twice the Value of STEEL"

"The name is relatively unimportant, but the ability to find news is all important; in this respect, *Iron Trade Review* had twice the value of STEEL."

"Interesting; Accurate; Delightfully Presented"

"I heartily congratulate you on the very attractive and businesslike style of your new publication. Its statistics and information are not only most interesting and accurate, but delightfully presented."

"Current Trends in Shortest Time"

"I have intended to write you since your July 3 issue, to compliment you on the new set-up of your magazine. I have always preferred the *Iron Trade Review* to any other trade publication, particularly because of its conciseness. There is so much one must read to keep in touch with general conditions nowadays, that it is really a boon to be able to pick up an important publication and feel that you can get the gist of the current trends in the shortest possible time."

* * *

"We are well pleased wih the new appearance of *Iron Trade Review*, now STEEL, and the new arrangement of typography and make-up gives the magazine a very attractive and snappy appearance."

* * *

"We have received the first issue of STEEL which takes the place of the *Iron Trade Review*.

"We wish to congratulate you on its appearance, and to advise that we shall continue to read it with the same interest and satisfaction."

Is More Attractive

"You have done the only logical thing that could be done and it is altogether an excellent move. The only comment I have is that you should have used Futura instead of Kabel."

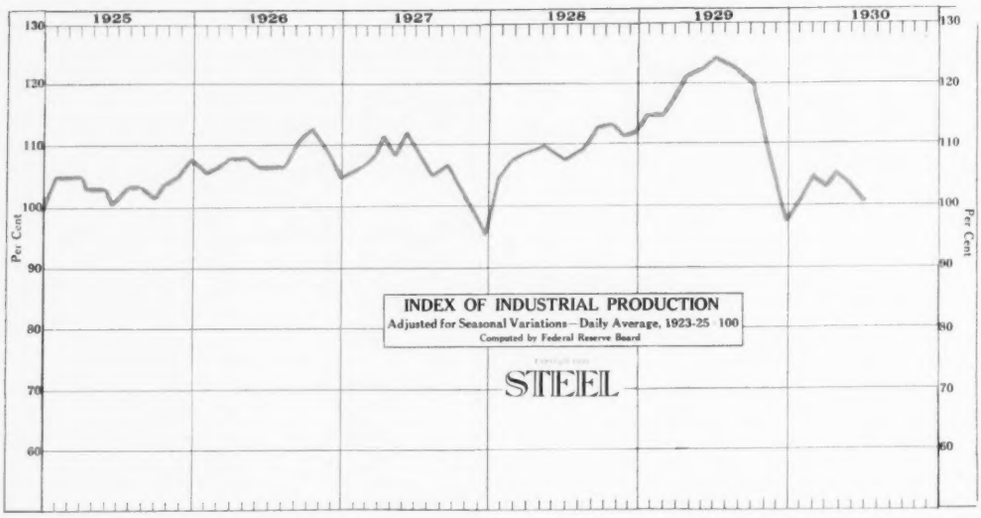
* * *

"I am tremendously impressed with the new make-up of the type face. As a publisher I know what kind of a job this means and you are to be congratulated. The new booklet is the finest thing I have ever seen. It gives me a picture of the steel industry that I had never appreciated before and that could not be obtained through a dozen other books all put together."

"Harder To Read Than I. T. R."

"Permit me to add adverse criticism to the new make up of STEEL. The insertion of numerous ads throughout the news section, combined with a wide-spread scattering of subject, matter on like subjects makes the magazine much harder to read than *Iron Trade Review*."

THE BUSINESS TREND



1929	
Jan.	117
Feb.	117
Mar.	118
Apr.	121
May	124
June	127

1930	
Jan.	103
Feb.	105
Mar.	104
Apr.	106
May	104
June	102

Vacations Near End; Business Prospects Brighter

AUGUST 4 looms as a significant date for those who have been trying to find a definite turning point from which business recovery can be measured. While no one can be certain that further recessions in activity will or will not take place, the fact that a number of important plants are resuming activity on August 4, after weeks of almost complete idleness, is sufficient to have a reassuring effect on business.

Sentiment and facts are likely to contradict each other for several weeks, or at least until facts catch up with sentiment. As the reports for July appear, they will continue to emphasize the abnormally low activity of that month. Much more encouragement is to be found in the weekly statements, which indicate that activity has gained moderately every week since July 4. Industrial production, as measured by the federal reserve board was lower in June than at anytime this year and the board's index for July probably will be even lower.

Predict Pick-up in Industrial Activity Will Be Gradual

In reality the business situation has remained unchanged throughout July. Industry has drifted along, waiting for the expected revival in the fall. Opinions differ as to what may be expected in the next three months. The rather encouraging quarterly reports of earnings by U. S. Steel and Bethlehem were accompanied by statements that the managements look for a gradual pickup in the current quarter. One steel company is reported to have decided that an "almost perpendicular" rise in demand will be witnessed soon and this company is going to provide for its needed materials on that basis. The majority opinion seems to be that recovery will be gradual.

Prices still are uncertain, although there is slightly more resistance to shading. Demand from the various steel consuming fields remains unchanged, with plates for shipbuilding and pipe line work and shapes for structural projects more active than any other commodities.

Commodity Prices and Money Rates Low but Assured Income Is Key

It will be worth while to watch building operations during the next year. Money is cheap, real estate values are much lower than at any time since the war, and the cost of materials is down. Wages alone have remained high. Under these conditions, it was natural that President Hoover and others tried to stimulate building. They succeeded in hastening public projects, but residential construction has not responded. Many small houses are needed but they will not be built until the low salaried man is sure that his income is secure. Thousands of workers who bought their lots prior to this depression, have had to give them up because of reduced income. Had good times continued, many of them would have built homes. For these reasons, it is our opinion that a real revival in small house building cannot occur until some time after general prosperity to wage earners becomes an assured fact.

The same reasoning applies in lesser degree to the purchasing of automobiles, washing machines, refrigerators and numerous other articles in which steel is an important material. A steady income for the great army of workers seems to be the key to business recovery.

	1929	1930
June	$24,029,392	$14,376,936
May	25,604,641	16,570,790
Apr.	22,361,428	16,113,583

U. S. Steel Corp. Earnings Compare Favorably With 1928

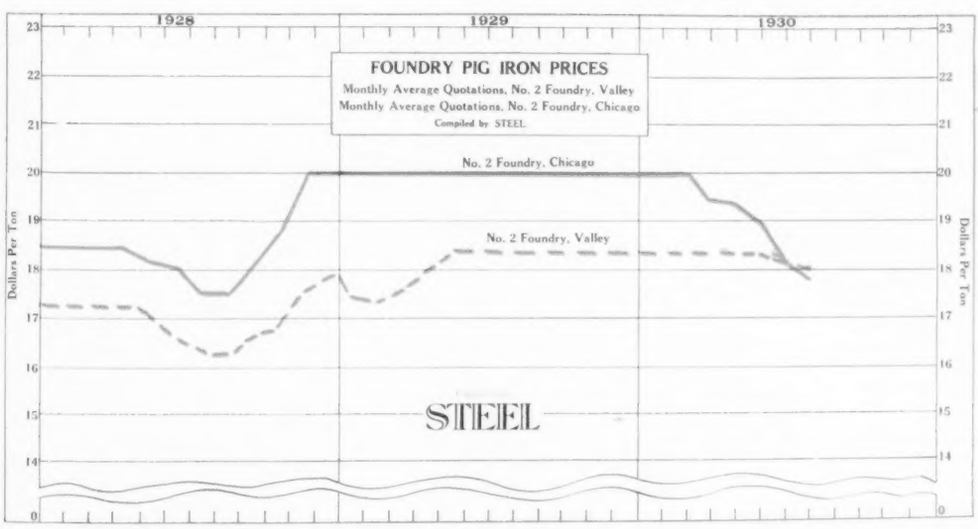
Second quarter earnings for the United States Steel Corp. after federal taxes but before depreciation, depletion, interest, etc., show a slight decline from the first quarter report. Although second quarter earnings are approximately 5 per cent lower than first quarter and about 35 per cent below the corresponding quarter of a year ago, they are practically equal to those of 1928, which was considered to have been a good year.

For the second quarter, earnings totaled $47,061,304, as compared to $71,995,461 in 1929 and $46,932,986 in 1928. For the individual months May was the best with $16,570,790 as contrasted to $16,113,583 for April and $14,376,931 for June.

Foundry Pig Iron Quotations Dip Lower in July

Monthly average quotations for No. 2 foundry pig iron at Chicago and in the valley, were lower in July than in June. In the case of No. 2 foundry, Chicago furnace, it is necessary to go back to the middle of 1928 to find an average quotation as low as that of July. The price of foundry iron in the valley is now about equal to quotations in March, 1929.

It is quite possible that in holding to a single quotation for practically a year or more, as was the case with foundry iron, the market is bound to change more drastically when the break comes than if the prices had responded more freely to supply and demand. Thus we have witnessed a series of sudden reductions within a comparatively short time.



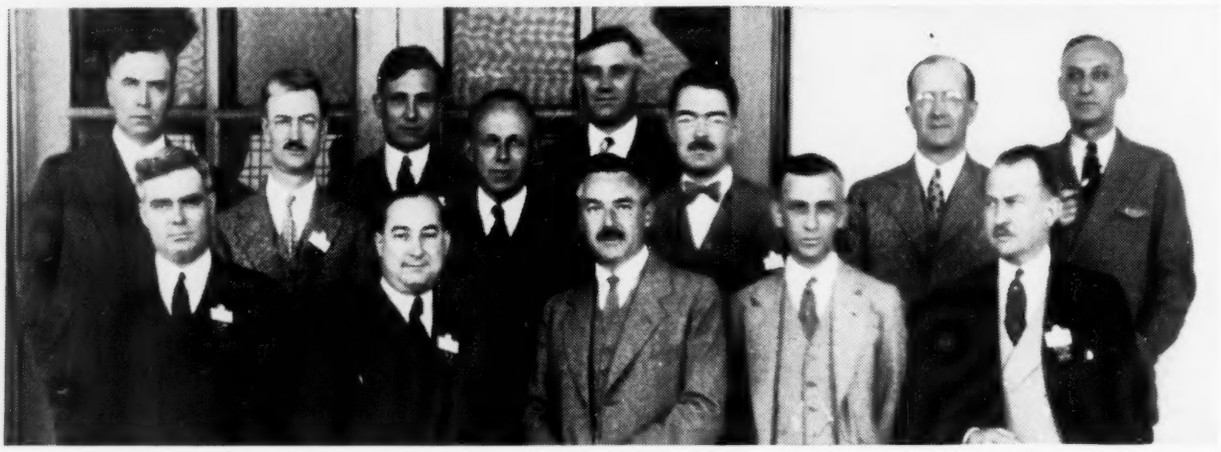
Monthly Averages

	No. 2 Foundry Chicago	No. 2 Foundry Valley
July, 1930	$17.90	$18.00
June, 1930	18.37	18.37
May, 1930	19.00	18.50
July, 1929	20.00	18.50

STRUCTURAL STEEL CREATED THE SKYSCRAPER

MEET THE DISTRICT ENGINEERS

of the American Institute of Steel Construction



BACK ROW, left to right, Lee H. Miller, chief engineer; district engineers, W. E. Emmett, San Francisco, and Henry Penn, Chicago. SECOND ROW, district engineers, J. N. Keenan, New York; Ernest N. Adams, Worcester, Mass.; James G. Allen, Birmingham, Ala., and Alexander Miller, Cleveland; F. H. Frankland, director of engineering service. FRONT ROW, district engineers, L. H. Dodd, Dallas, Tex.; B. F. Hastings, Philadelphia; C. Curtis Tracy, Milwaukee; C. W. Harding, St. Louis, Mo.; and Jack Singleton, Topeka, Kan.

THE engineers of the American Institute of Steel Construction are co-operating with local engineers, architects, fabricators, public officials, financiers and all others interested in structural steel. They never compete with architects and engineers, and their offices are entirely separate from those of local fabricators' associations or individual fabricators.

They are lending a helping hand wherever it is needed. They are promoting uniform practices in the design and distribution of structural steel. They are responsible for an ever-widening acceptance for the Institute's Code of Standard Practice, the Fireproofing Specification and the Standard Specification for the design, fabrication and erection of structural steel. They are thus helping the various factors in construction, including the owner, to save millions of dollars a year. They are at your service.

DISTRICT NO. 1—For Connecticut, Rhode Island, Massachusetts, New Hampshire, Vermont, Maine—Ernest N. Adams, 504 Slater Building, Worcester, Mass.

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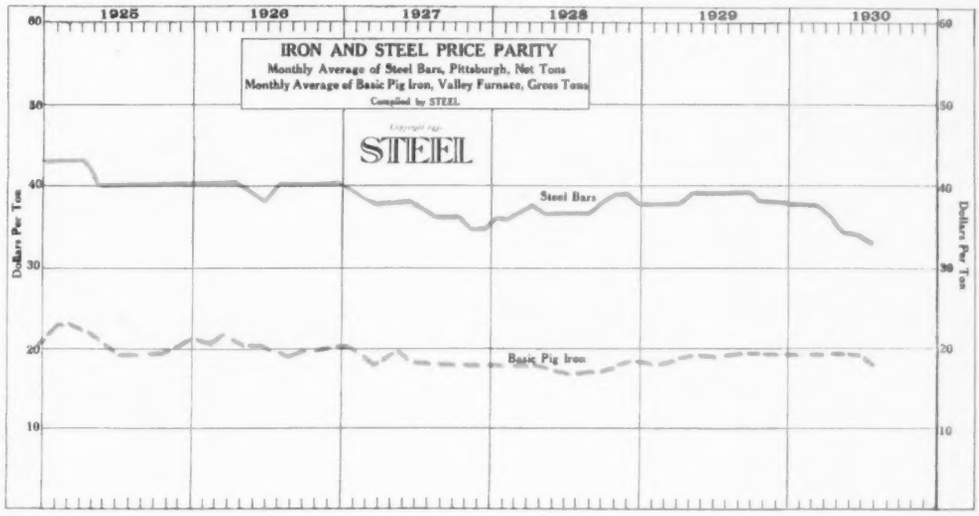
The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas and San Francisco.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY



Monthly Averages

	Steel Bars	Basic Iron
July, 1930	$34.00	$18.20
June, 1930	35.00	18.50
July, 1929	39.00	18.50

Basic Pig Iron Price Drops After Holding for 13 Months

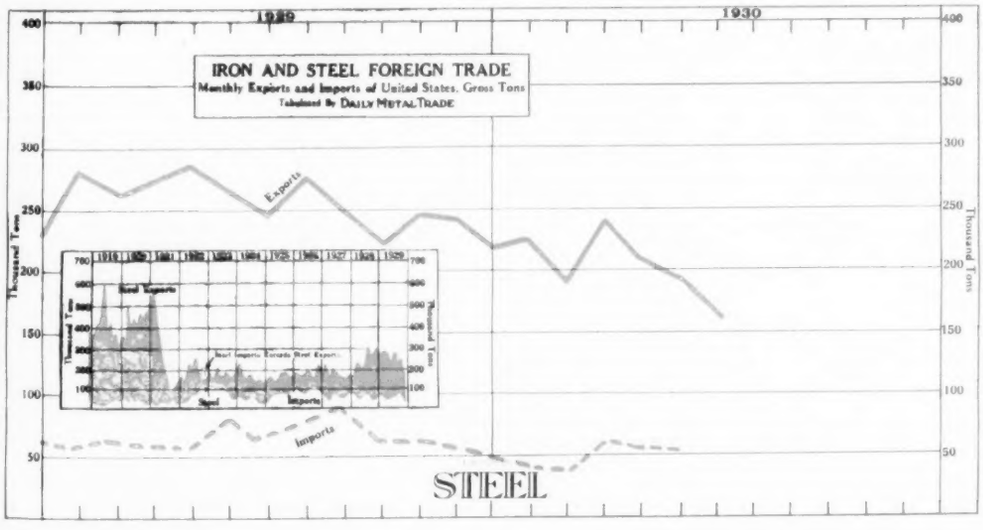
Prices of steel bars and basic pig iron both declined moderately during July. Steel bars dropped to $34 per ton for the month, as intimated in this column three weeks ago. This decline represents another step in the downward trend of quotations for this commodity, which has been particularly noticeable since the fall of 1929. At $34 per ton steel bars are the lowest since July, 1922. The average of basic pig iron in July dropped to $18.20, which decline was the first change in price for 13 months. Since June, 1929 basic pig iron, valley, has been quoted at $18.50 per ton.

With the decline in price of these two representative commodities, the spread still continues to diminish.

Iron and Steel Exports Slump to 1926 Level

Iron and steel foreign trade in June continued to show the downward trend that was started late in 1928. Exports in June declined for the third consecutive month. For the month exports totaled 159,392 gross tons, a reduction of 19 per cent from May and 36 per cent from June one year ago. These figures represent not only a new low for the year but also the lowest for any month since February, 1926.

Import figures for June are not yet available due to the Smoot-Hawley tariff bill, which became effective on June 17. For the first 17 days, however, imports amounted to 29,138 gross tons. Since this figure covers only part of the month, direct comparison with the monthly totals cannot be made.



Exports

June, 1930	159,392
May, 1930	196,120
June, 1929	247,811

Imports

June, 1930	Not available
May, 1930	52,297
June, 1929	63,635

STEEL SHOW ISSUE—SEPTEMBER 11, 1930

Information

General

The National Metal Congress (American Society for Steel Treating Exposition) will be held at the Stevens Hotel, Chicago, September 22-26. This year two more groups of metal experts will participate making seven technical societies represented:

American Society for Steel Treating
American Welding Society
Iron & Steel Division, A. S. M. E.
Machine Shop Section, A. S. M. E.
Iron & Steel Division, A. I. M. & M. E.
Institute of Metal Division, A. I. M. & M. E.
International Railroad
Blacksmiths Association

In addition to the splendid program provided a new feature will be introduced—a conference on sales methods and problems.

Naturally STEEL will play a prominent part in co-operating to make this Twelfth Annual Metal Congress a success. The issue of September 11 will carry the complete advance details of exposition and convention—program, list of exhibitors and location of exhibits, Chicago information—everything of interest to those going to Chicago. This issue will be in the hands of readers 10 days before the convention opens—ample time to make plans.

This issue will bring the convention and exposition to those who cannot attend.

Publication

A feature of the September 11 issue of STEEL will be a combined editorial and advertising section devoted to the same interests as the National Metal Congress.

Those advertisers desirous of appealing to these same interests will find unusual value in being properly represented in the special section of this issue.

This interest value is not confined to the readers of STEEL who attend the Chicago Exposition, but extends in even larger measure to those similarly interested who do not attend, thereby depending more largely upon STEEL to bring the Exposition to them.

COLOR

Two colors will be used—red and black—printed on India tint coated stock.

RATE

Including color and insert position—$150 a page for regular advertisers—$175 per page one time.

CLOSING DATES

Final forms close Tuesday, September 2. Reservation and copy requiring composition should be in Cleveland not later than Monday, August 25.

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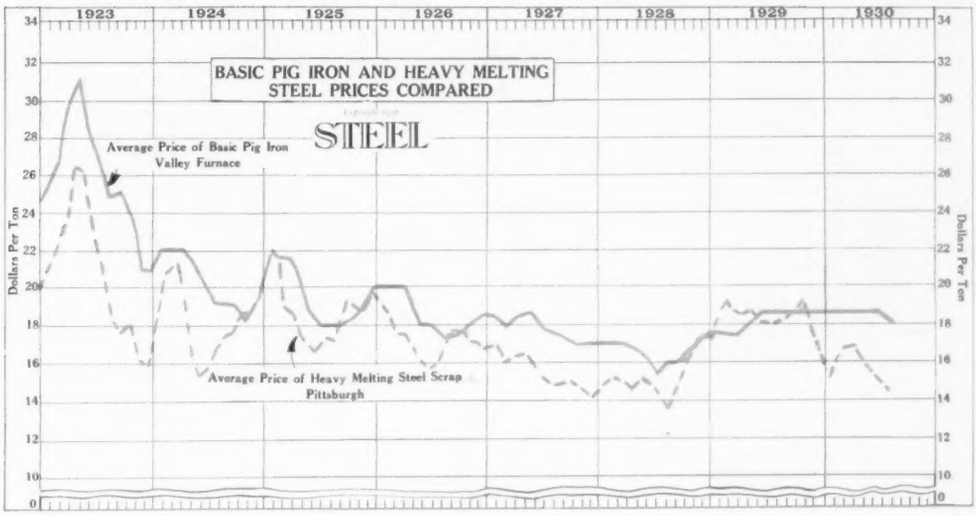


Monthly Averages

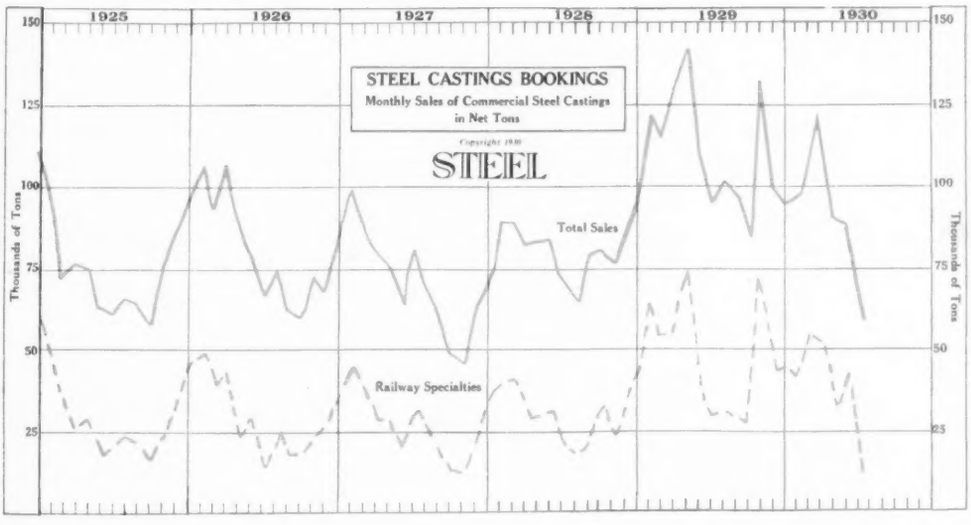
	Basic Iron	Heavy Melting Steel
July, 1930	$18.20	$14.90
June, 1930	18.50	15.10
May, 1930	18.50	15.25
April, 1930	18.50	16.05
July, 1929	18.50	18.45

Price of Heavy Melting Steel Declines for Fifth Consecutive Month

During July prices of heavy melting steel and basic pig iron dropped to new lows for the year. Heavy melting steel fell to $14.90 per ton, which is the lowest price that has been quoted since July, 1928. This is the fifth consecutive month that prices have fallen, and with the exception of January and February the decline has been unbroken since last September. During this period basic pig iron, valley furnace, has remained at $18.50 per ton. In July, however, basic iron weakened, the average of the month being $18.20. Prices at present are weak, but there are indications that buying in better volume will develop soon. However, the upturn in quotations is not yet in sight and may be months in the future.

Orders for Steel Castings Drop 33 Per Cent in June

New orders for steel castings, as reported by the principal manufacturers to the department of commerce, in June dropped 33 per cent to the lowest level since October, 1927. Total orders for June amounted to 61,516 tons as compared to 91,307 tons in May and 95,201 tons in June, 1929. Total orders are now at 43 per cent of capacity compared to 63 per cent in May. June orders for railway specialties dropped 67 per cent from May's level to 13,714 tons. Orders are 32 per cent below the corresponding period a year ago and are only 21 per cent of operating capacity. Although orders for steel castings are subject to large fluctuations, the drop in June clearly reflects this summer's quiet business.



Total New Bookings	Tons
June, 1930	61,516
May, 1930	91,307
June, 1929	95,201
Railway Specialties	
June, 1930	13,714
May, 1930	42,051
June, 1929	34,947

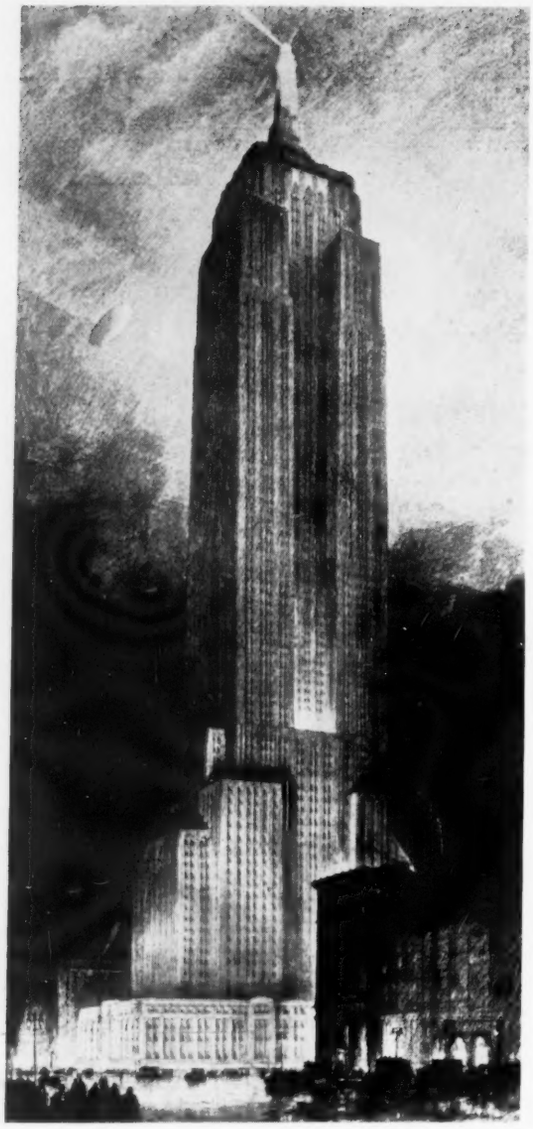


FIG. 1 (Above)—Architect's conception of new Empire State building, Fifth avenue from Thirty-third to Thirty-fourth streets, New York, as it will appear when completed. With a 200-foot mooring mast rising from its top, the building will be the world's tallest skyscraper

FIG. 2 (Below) — The 90-story structure now is erected to a height of about 50 stories. Some 300 tons of polished chrome-nickel corrosion-resisting steel and 300 tons of cast aluminum are being used for exterior embellishment, the steel for window and ornamental trim and the aluminum as spandrels between windows of successive floors. The building will afford an interesting study in light and shade

Fig. 3—One of the forming operations on the corrosion-resisting steel. The material must be handled with great care to prevent die marks or scratching the polished surface

Skyscraper Employs 300 Tons of Corrosion-Resisting Steel

By E. F. ROSS

Associate Editor, STEEL

BUILDING operations continue to account for the greatest single use and most spectacular applications of the recently introduced chrome-nickel steel of the 18-8 type. Only within the past few weeks has the scaffolding been removed from the 1046-foot Chrysler building in New York, revealing an ornamental cap of brightly polished corrosion-resisting steel. Now a second New York skyscraper of immense proportions, the Empire State building, is rising rapidly and in its construction will be utilized on the exterior more than 300 tons of the same alloy for window trim, ornamental sunbursts, storefronts and dirigible mooring mast.

Chrome-nickel steel, most commonly referred to as 18-8, contains 17-20 per cent chromium, 7-10 per cent nickel, less than 0.20 per cent carbon, less than 0.50 per cent manganese, over 0.50 per cent silicon, and maximum of 0.025 per cent sulphur and phosphorus. The alloy is austenitic in structure, that is, all of the carbon is in solution, and in that condition it is absolutely rust-resisting in a moist atmosphere, even in salt air. Much justification therefore, can be found for using this steel in decorating and embellishing buildings.

The metal will run in strips serving as window trim and mullions nearly the whole height of the 1248-foot building, affording brilliant contrast with the gray limestone piers and the darker vertical lines of the windows. The architect's sketch of Fig. 1 shows the building as essentially a great central tower, the mass of which is varied by setbacks at intervals, the whole set on a 5-story base covering 84,000 square feet. The vertical lines of polished steel begin at the sixth floor and extend upward the full height, merging at the top into great sunbursts of the 18-8 alloy. Dark verti-

Fig. 4—Welds are ground and filed down by hand, then polished to match the Tampico brush finish of the sheet

cal lines of the windows are kept intact by use of deplated cast aluminum spandrels, the dark gray of which will merge with the window black.

Varied Effects Are Obtained

Window openings are arranged in groups of twos and threes, the groups separated by limestone piers. At the sides of each window group is a trim of the corrosion-resistant steel 10 inches wide and windows of the same group are separated by mullions of the alloy 22 inches wide. The plane of both these metal sections is broken by vertical angles carefully worked out to give the desired light and shade, the lines of these angles extending vertically the full 85 stories above the fifth floor and broken only by the setbacks. At each setback the metal lines terminate in decorative caps similar to the sunbursts topping the tower, but smaller.

All told, some 300 tons of 18-8 steel will be employed on the exterior of the Empire State building. Of this between 240 and 250 tons will be required for window trim and mullions, the balance going into ornamental caps, sunbursts and mooring mast. Contract for fabricating the 6352 pieces of window trim and 2752 mullions, making a total of 9104 sections or a total of over 20 miles if laid end to end, was awarded to the United Metal Products Co., Canton, O., and production has been under way for several months. Placing of polished steel strips in position on the building began in June. The United company, manufacturer of hollow steel swing doors, elevator doors, elevator enclosures, steel partitions and rolled moldings of steel, monel metal, aluminum and bronze and its alloys, had had no previous experience in fabricating the comparatively recent 18-8 alloy, consequently it was necessary to develop an entirely new technique.

Half of the steel is supplied by the Republic Steel Corp., Massillon, O., and the other half by the Allegheny Steel Co., Brackenridge, Pa. Although of essentially the same specifications, the Republic material is known as Enduro Nirosta, or KA2, and the Allegheny material as Allegheny metal. All stock received in the United plant is of final length and width so as to require no trimming and is polished on one side to a Tampico brush finish, a finish of satin texture to eliminate glare common to the mirror polish. Unlike ordinary steel sheets which can be shipped in bundles, the 18-8 sheets must be placed in special crates, each holding about 12 sheets, with wrapping paper separating the polished surfaces to avoid scratching or maring. Although the sheets had been inspected at the mill, they are removed from the crate one at a time and again inspected for defects.

Sheets Formed and Welded

The trim and mullions shown in Figs. 5 and 6 are made of 18-gage, however, some 16 and 22-gage stock is purchased for reinforcement purposes. The longest section fabricated is 151 9/16 inches; a typical section is 139 9/16 inches long. Operations incident to fabrication include a limited amount of punching on the corners of the sheets, bending or forming, spot and seam welding, and polishing of the welded joints.

Because of the great hardness of 18-8 steel, a chrome-nickel die steel is used in the forming brakes. This steel contains carbon 0.60-0.70, manganese 0.60-0.80, nickel 1.00-1.50 and chromium 0.65-0.85 per cent, and is extremely tough. As purchased it is heat treated to 250-275 brinell or as hard as possible

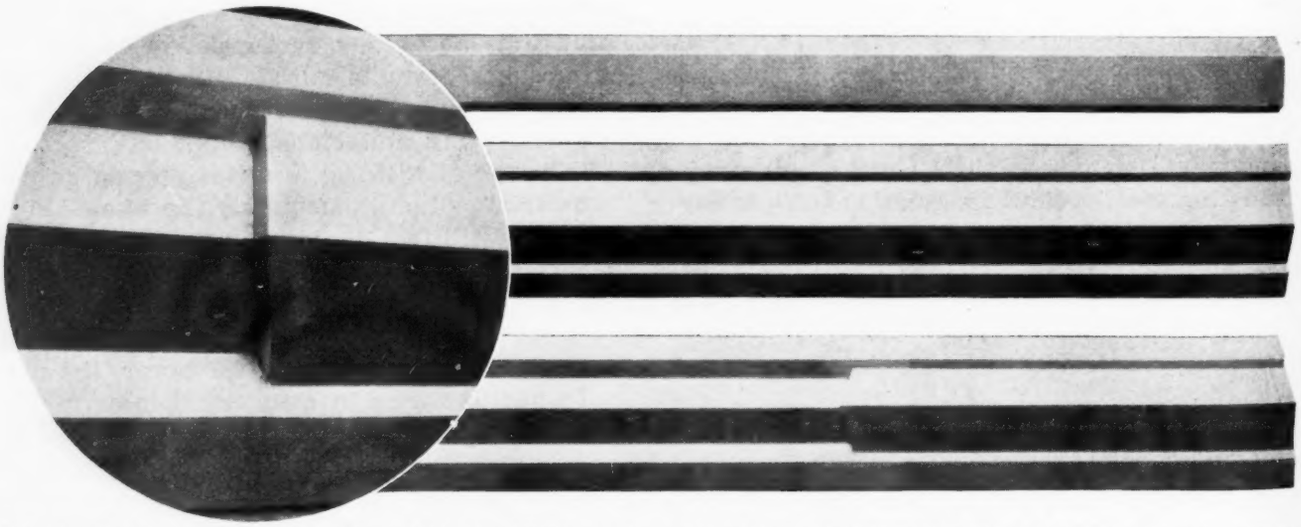


Fig. 5 (Top)—A section of trim which is placed at the sides of the windows. (Center)—A mullion or pier section separating adjacent windows. (Bottom)—A special section made up by welding together two sections of different contour. (Inset)—A close-up of a welded and polished joint similar to that shown in the special section

but still machinable. In designing dies for ordinary steel, a spring back allowance of 3 or 4 minutes usually is sufficient; for the 18-8 alloy, however, an allowance of about 8 minutes on each side, or a total of 15 minutes, is found necessary to overcome the increased stiffness or spring of the metal.

Extreme care must be exercised in drawing or forming chrome-nickel steel because die marks can be produced easily and these must be removed by polishing, a laborious and costly operation. Thus, die marks must be prevented if possible and the United company accomplished this elimination in a simple and effective manner. Linseed oil and lithopone are mixed together to form a compound of some consistency and this is applied to the upper drawing die with a brush. A strip of light wrapping paper then is placed between the dies which are brought together, causing the paper to adhere to the upper die. When a sheet is placed polished side up between the dies for forming, sufficient linseed oil and lithopone filter through the paper to serve as a lubricant and to eliminate die marks completely. An average of 15 die impressions can be made before it is necessary to relubricate the die and replace the paper. One of the press forming operations is to be seen in Fig. 3.

Each metal unit is reinforced with 18-8 channel strips at intervals of about 2 feet. The facing is fastened to the structural steel of the building at the floor levels with web plates and structural brackets, as shown in Fig. 9. Additional anchorage is provided between floors by strap anchors set in the brick work and bolted to the reinforcing channel strips. Bolts of ½ and ¾-inch diameters are used in anchoring. The sections fit together with a lap joint occurring at each floor level; thus provision is made for the contraction and expansion of the metal. The lap joint is sealed with a continuous interlocking clip at each joint to make the connection weathertight. In the actual construction of the building, these fabricated lengths are fitted together much the same as sections of a fishing rod.

Assembled by Spot Welding

The reinforcing channel strips; anchor strips; interlocking clips or backing strips, and 2 x 2 x ¼ inch structural steel angles 12 inches long, two at each end of every section, are electric spot welded to the chrome-nickel sections. This spot welding is performed on 25-kilowatt machines at voltages determined by experiments to give the best results. Considerably more pressure must be exerted by the welding dies than is required for ordinary steel, but the current is only approximately half of the usual intensity.

In some special sections such as that shown in Fig. 5, where the contours of the two ends differ, it is necessary to weld two shorter sections together. A backing strip of 18-8 metal is spotted behind the joint, following which the joint is carefully arc welded. As is always the case in welding chrome-nickel steel the arc polarity must be reversed. Here again the proper voltages were fixed by experimentation, but a current of 42 amperes gives best results. For certain limited operations, oxyacetylene torches are used. In all welding, both electric and gas, chrome-nickel welding rods of 18-8 composition and available from several sources, are employed. Care always must be taken to prevent pitting or burning of the polished surface.

Smoothing off and polishing the welded joints constitutes an interesting operation, this being done in a special section of the shop. An example of this work is shown in the inset in Fig. 5 and the polishing department is shown in Fig. 4. The bead formed in welding is rough ground off with electric portable grinders using 36 N grit wheels. The bead or joint is smoothed down to

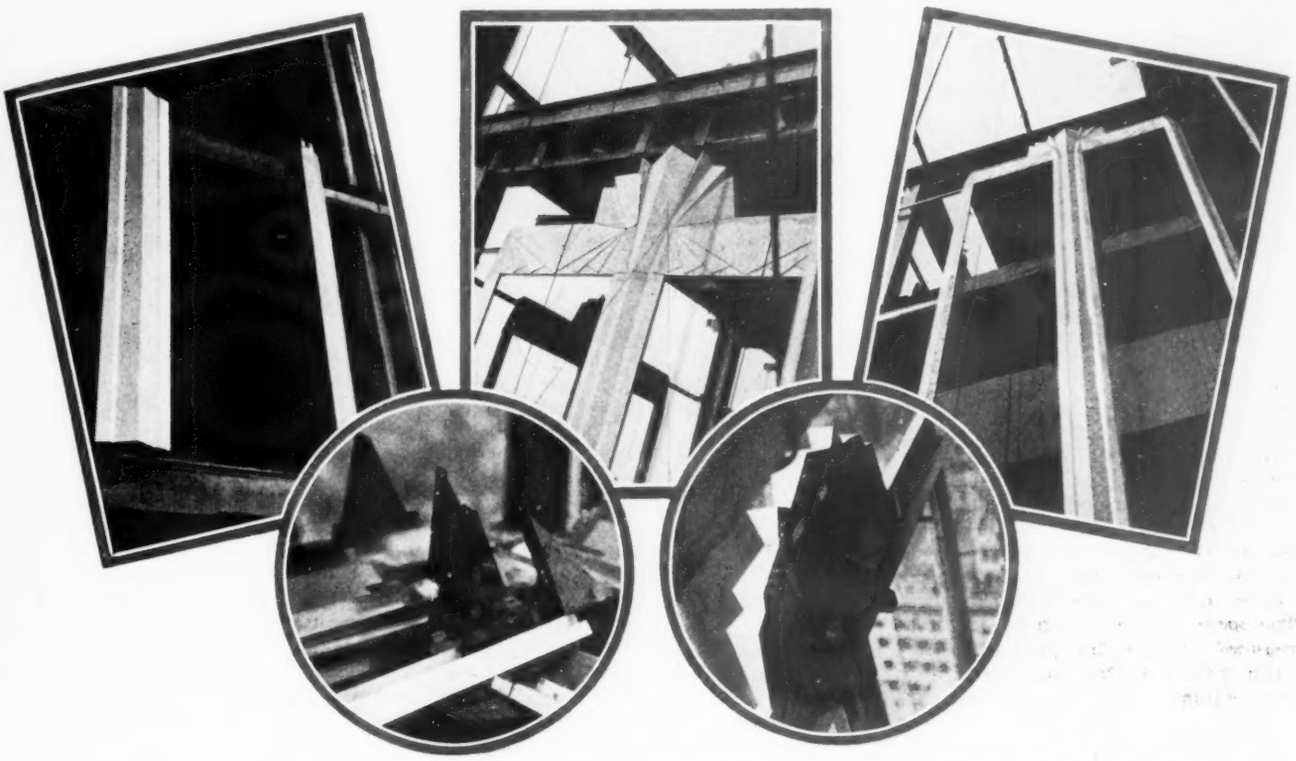


Fig. 6 (Upper left)—A mullion and trim section after being attached to the structural steel frame. Fig. 7 (Center)—Exterior of the window trim showing ornamental cap to appear at top of each setback. Fig. 8 (Upper right)—A 3-story section of the corrosion-resisting steel strip attached to building frame. This also shows ornamental cap at the top near a setback. Fig. 9 (Lower left)—Chrome-nickel steel sections with structural brackets attached for placing on building. Fig. 10 (Lower right)—Interior of ornamental cap shown in Fig. 7

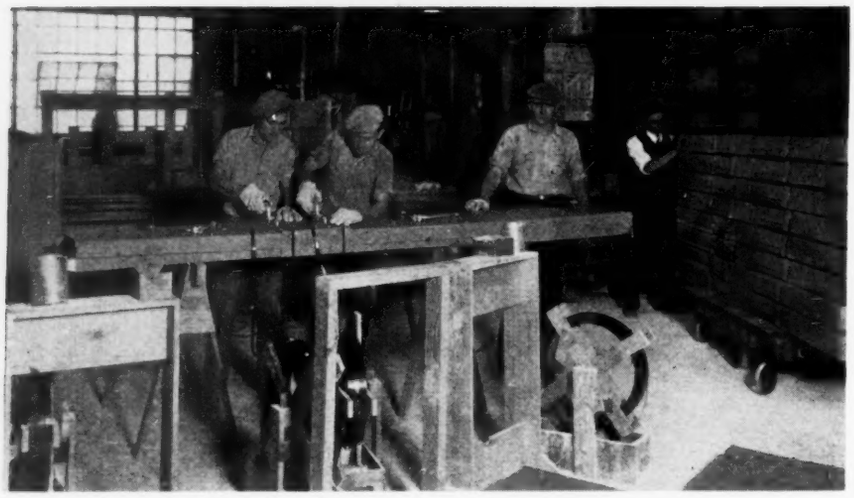


Fig. 11—Finished sections are shipped one or two at a time in boxboard cartons securely bound with steel strapping

the metal section using mill files secured in holders to bow the blade and to prevent scratching or marring the surface with the file ends. It should be pointed out that filing is not permissible on the 18-8 alloy unless the metal is subjected to a passivating or pickling treatment to be described later. After being filed the joint is polished with a 150-grain buffing wheel. The final polish, however, is obtained with a Tampico fiber brush and a polishing compound consisting of four parts of No. F powdered pumice, one part of selected lime, four parts of light lubricating oil and one part kerosene. The speed of the fiber brush must be reduced to give the joint the same satin polish as that on the rest of the section.

Pickling Is Final Step

At this point fabrication has been completed and the sections are ready for the pickling treatment. To remove any finger prints, grease picked up from the forming dies, or other foreign matter, each section is washed thoroughly with gasoline and rubbed dry. A dusting of whiting is applied and wiped off immediately to assure a completely dry and clean condition. In one end of the pickling plant are two pickling tanks, as shown in Fig. 12. These tanks, lined with 18-8 corrosion-resisting steel, contain a 25 per cent nitric acid solution steam heated to a temperature of 120-125 degrees Fahr. Each chrome-nickel section is submerged in one or the other of the two tanks for 20 minutes, being supported by pipe equipped with 18-8 corrosion-resisting steel hooks. During the period of immersion any ferrous particles or slivers embedded in the surface of the section during rolling or filing down the welds are removed. Unless these particles are removed, rust or corrosion spots are likely to develop in the steel during service.

At the end of the 20-minute pickling, the section is lifted from the acid still suspended from the pipe and hooks and is immersed in cold water to cut the acid. Remaining in the water only momentarily, it is placed on one of two tables adjacent to and draining into the rinse tanks and washed with hot water and a rag. Next the section is dried by wiping and is dusted with whiting and rubbed briskly to remove all traces of moisture. At this point another and final dusting of whiting is applied to protect the surface of the metal during shipment.

The use of chrome-nickel steel trim and ornamental work has required new methods in the handling and shipment of steel for building purposes. Never before has it been necessary to exercise such extreme care with steel sheets in the mill and polishing operations, in all fabricating operations and in shipment of the finished product. Polished surfaces must not come in contact with any equipment or object which might cause scratches and therefore create opportunity for corrosion. In shipping the finished sections to New York, the United Metal Products Co. employs boxboard cartons as shown in Fig. 11, a single carton holding one right-hand and one left-hand length of trim or one pier section. Where two sections are placed in one carton, a boxboard dividing strip prevents chafing. As will be noted from the illustration, each carton is bound separately with steel strapping.

The company is completing sections for about one floor a day and as a box car holds sections for two floors, a car is released on an average of one every two days. To prevent the stacked cartons from aggregating too heavy a dead load on those in the bottom of the car and to prevent shifting, a framework of wood is erected and the cartons supported in sections.

Sections All Identified

The general contractors for the Empire State building are Starrett Bros. & Eken, New York, but two subcontractors, C. E. Halbeck & Co. and William H. Jackson Co., both of Brooklyn, N. Y., are engaged in erecting the metal, each being assigned two adjacent sides. One contractor erects the steel manufactured by the Republic Steel Corp. and the other that made by Allegheny Steel Co. For this reason all steel supplies by these two companies must be kept separate during fabrication. Each unit of the metal has its particular place in the building and each carton is marked on the outside to indicate the place and the name of the contractor so that the sections can be kept completely covered and protected until they are put in place. As the sections are erected, the brick backing is built

(*Concluded on Page* 50)

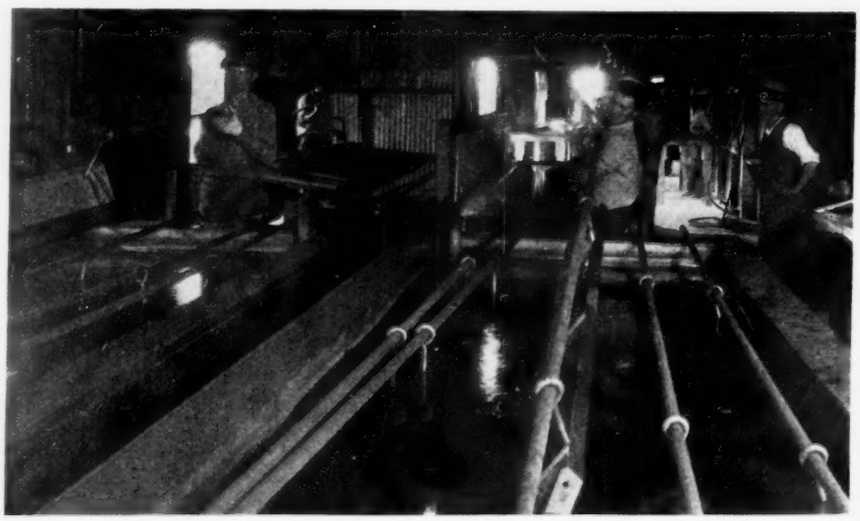
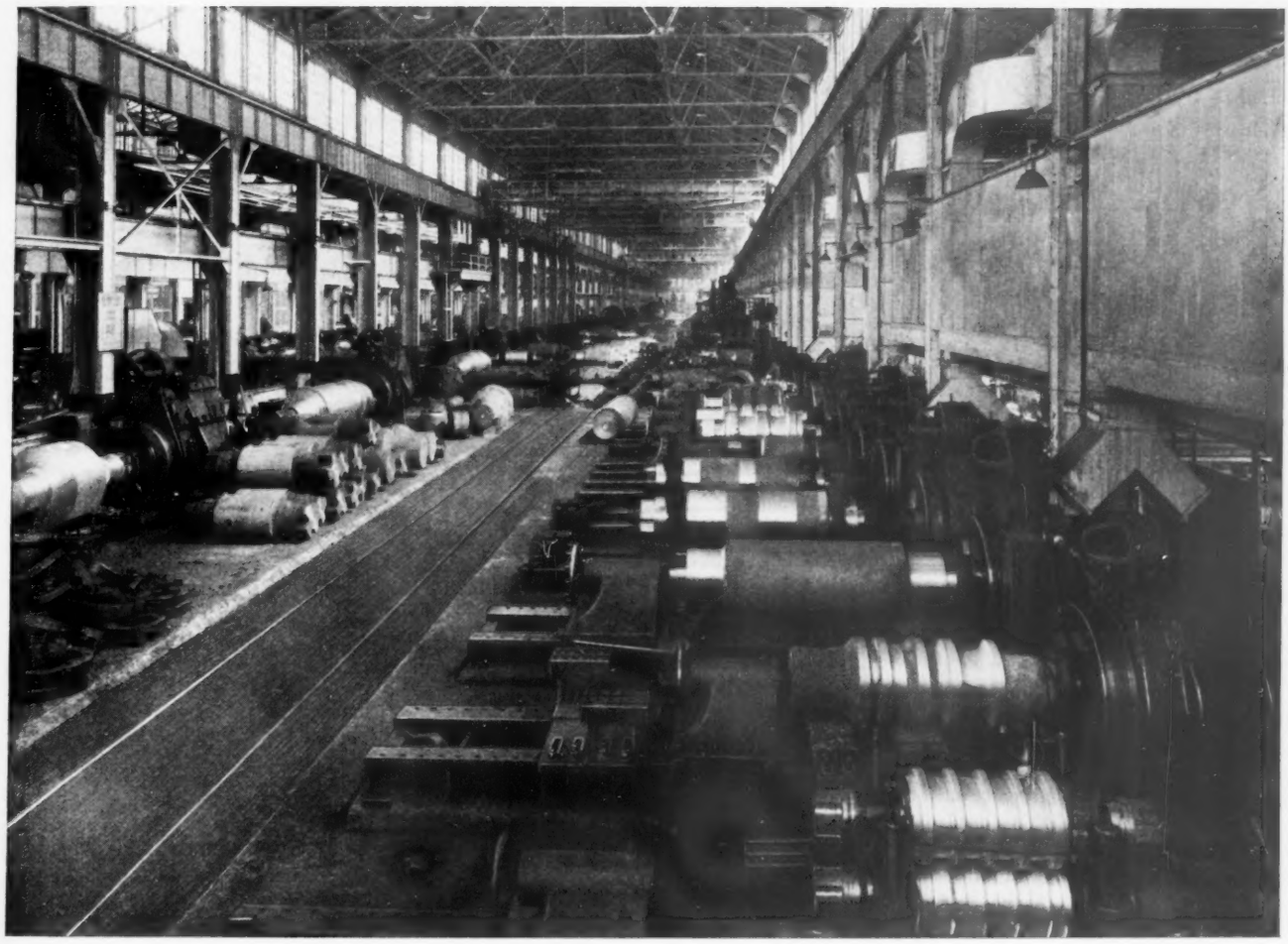


Fig. 12—All sections are given a pickling or passivating treatment in 25 per cent nitric acid to remove all ferrous particles which might cause corrosion

MESTA ROLLS

"MESTA SPECIAL"
Alloy Steel Rolls
Carbon Steel Rolls
Chilled Iron Rolls
Sand Iron Rolls
Alloy Iron Rolls



View in Mesta Roll Finishing Department

MESTA MACHINE COMPANY

Pittsburgh, Penna.

Use More Welded Structural Steel in United States

BY FRANK P. McKIBBEN
Consulting Engineer, General Electric Co.

IN THE United States are nearly 100 bridges and buildings in which welding has been used wholly or partially for connecting together the members constituting the steel framework. Among the most notable examples is the 11-story Hotel Homestead, Hot Springs, Va., which is the tallest welded building thus far attempted. It is 180 feet high. All steel, both in the shop and at the building site was welded.

Another important structure is the steam power plant at Hotel Chalfont, Atlantic City, N. J., which is 150 feet high and has all field connections of beams and girders to columns, all column splices and all important connections of beams to girders, welded. Lesser important connections of secondary beams to girders were bolted in the field in accordance with the usual practice in Atlantic City. Except for a few very heavy plate girders which were fabricated in another shop than that in which the shop welding was performed, practically all the shop work of this structure was welded.

Shop Uses 987 Tons

At present the welded building having the largest steel tonnage is the welded shop of the General Electric Co. at West Philadelphia, Pa., wherein 987 tons of steel were used, with all shop and field work welded except in a few unimportant connections where bolts were used.

Another interesting application of welding, and one which appears most promising, lies in the strengthening of existing steel bridges or shop buildings by the replacement or reinforcement of corroded or overstressed members.

Three examples of such bridge strengthening are notable. An old railroad bridge over the Missouri river at Leavenworth, Kans., consisting of one 400-foot draw span and two 330-foot fixed spans was reinforced by arc welding. In this reinforcement, 325,000 pounds of structural steel were added; 7500 lineal feet of welds and 2000 pounds of welding wire were used. The job was accomplished between Feb. 28 and April 28, 1928, without interrupting normal railway traffic on the bridge.

An old single-track Pennsylvania railroad bridge over the Susquehanna river at Havre de Grace, Md., had an additional floor system welded into the old trusses above the existing floor to convert the structure into a double-deck highway bridge for heavy automobile traffic. The bridge, consisting of several spans, is approximately 3000 feet in length and 1500 tons of steel were added by welding.

A Pennsylvania railroad bridge near Pittsburgh, has three spans of pin-connected trusses in which several of the diagonal truss members, each consisting of two eye bars, had one bar too long causing dead and live load stresses to be borne largely by one of the eye bars. To shorten each long bar, a pair of turnbuckles was added to it by welding, after which a short portion of the main bar was removed by the oxyacetylene torch. The turnbuckles were then tightened and shortened so that the long bar carried its proper proportion of the stress.

In many cases of strengthening old structures, such as girders, truss members or columns, the transference of a portion of the dead load stress of the new reinforcement is not easily obtained. Consider a plate girder tension flange consisting of two angles to which is to be welded a plate to increase the flange area in order to reduce the dead load unit tension in the flange. If the plate be welded cold the dead load stress remains carried by the angles only. To transfer stress to the plates, the girder must be raised and temporarily supported during the welding, or else the plate must be preheated to a proper temperature, so that when released or cooled, it will assume its full share of the dead load stress.

By the following two question and answer examples, and general formula, the method of calculating and practical application of such stress adjustments is brought out:

1. How many degrees, D, increase above air temperature are required to cause a unit stress, in the added steel of 8 pounds per square inch?

Change in length of added steel

$$\text{due to stress} = \frac{SL}{E}$$

Change in length of added steel due to heat = DCL

Equating these and solving for D,

$$D = \frac{S}{EC}$$

Where S = unit stress in the steel added; L = length in inches of steel added; D = degrees Fahr.; C = linear coefficient of expansion per degree Fahr.; E = Young's modulus of elasticity.

2. How may the above change in temperature with corresponding unit stress be most simply determined and calculated?

By welding one end of the new steel to the old steel and heating the new steel till its length increases an amount equal to DCL; then, while the new steel still is hot, weld the other end and complete the intermediate welding.

For example: Suppose it is desired to cause a stress of 10,000 pounds per square inch in an added plate having a length of 300 inches, through how many degrees Fahr. must the plate be heated and what will be the corresponding increase in length?

$$D = \frac{S}{EC} = \frac{10{,}000}{30{,}000{,}000\ (0.000.007)} = 50 \text{ degrees Fahr.}$$

Increase in length = DCL = 50 × (0.000.007) × 300 = 1/10 inches, or more directly, increase $= \frac{SL}{E} =$

$$\frac{1{,}000\ (300)}{30{,}000{,}000} = 1/10 \text{ inches}$$

The present tendency in electric

WELDING of structural steel members in buildings and bridges in the United States has made rapid progress and is well beyond the experimental stage. In nearly 100 cases, this method of fabrication and erection has been employed either wholly or in part with notable success. Some of the engineering considerations involved in the process are enumerated in the accompanying article prepared from a paper presented at the World Power Conference in Berlin, Germany, in June. The author, Frank P. McKibben, is consulting engineer, General Electric Co., Schenectady, N.Y.

UNDER THE NIROSTA STAR

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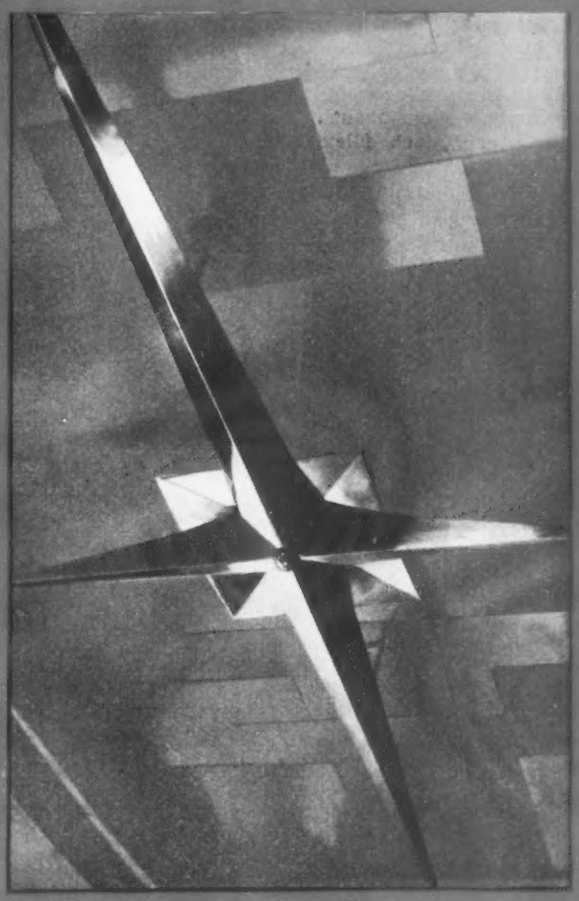

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NIROSTA METAL

arc welding is toward the use of higher currents and automatic welding machines. This is particularly true of the manufacture of steel pipes. Although for ordinary shop buildings the steel is welded by hand with currents from about 175 to 200 amperes for ⅜-inch fillets, there is a distinct trend toward machine welding in fabricating plate girders and other similar parts where long lines of welds are used. For hand arc welding in buildings, uncoated medium steel electrodes with carbon content of from 0.0013 to 0.0018 are almost universally used, but in steel pipe manufacture coated or sheathed electrodes are quite common. Steel to be welded should not be painted before welding. The best practice is to give the steel one coat of linseed oil after the shop welding but to defer painting until after shipping, erecting and field welding.

Most of the welding on buildings and bridges has been done with the arc, although a large steel building has just been completed with all shop and field welding accomplished by oxyacetylene.

While welded construction results in a distinct saving of steel in one-story buildings, the saving of steel is not so apparent in multi-story structures. In fact, unless the beams are made continuous, welding results in little, if any saving. And this continuity frequently costs more than it is worth, because the extra welding at the ends of beams to secure them costs more than the saving in steel effected in the main body of the beams.

Method Adopted Widely

In the principal cities and towns building codes designed to secure safer building construction are in force. Where municipalities have recently adopted revised codes, a provision for welding has generally been incorporated. To date, 63 cities and towns have adopted welding and many of the larger cities, including New York, have the subject under consideration. New York has drafted a new code which includes welding, but final action thereon has not yet been taken.

The American Welding society's code for fusion welding and gas cutting in building construction gives the following permissible unit stresses for use in designing structural details under static loads and these units are recommended for use where applicable:

"Welded joints shall be proportioned so that the loads specified in the building code shall not cause stresses therein to exceed the following amounts in pounds per square inch:

Shear on section through throat of weld	11,300
Tension on section through throat of weld	13,000
Compression on section through throat of weld	15,000

"Maximum fiber stresses due to bending shall not exceed the values prescribed above for tension and compression respectively.

"In designing welded joints adequate provision shall be made for bending stresses due to eccentricity, if any, in the disposition or section of base metal parts."

The value of 11,300 pounds per square inch given above in the American Welding society's code has come to be generally used for joints bearing quiescent loads. For a fillet with triangular cross section with base and altitude of the triangle each ⅜-inch this corresponds to a permissible safe strength in longitudinal shear of 3000 pounds per linear inch of fillet; for 5/16-inch fillets, 2500 pounds per linear inch.

To date atomic hydrogen welding has met with great success in uniting various nonferrous metals, or thin ferrous parts, but it has not been tried to any extent in welding the thicker steels in structures like bridges and buildings.

Welded Steel Tubes Tested for Physical Strength

Tubing made from sheet steel in which the longitudinal seam was welded under pressure by the electrical resistance method has been subjected to severe tests by the bureau of standards, Washington, and the results are given in research paper 161 entitled "Physical Properties of Electrically Welded Steel Tubing," by H. L. Whittemore, principal mechanical engineer; J. S. Adelson, chief metallurgist, Steel & Tubes Inc., Cleveland, and E. O. Seaquist, research associate of the bureau.

Tubes ranging in outside diameter from ⅝-inch to 3 inches and in wall thickness from 0.028 to 0.120-inch, inclusive, were tested to show the strength of the tube and the strength of the weld. With a variation of cold working a wide range of strengths was obtained without appreciable change in the carbon content of the steel. Most of the tubes were made from steel containing about 0.08 per cent carbon, and a few were made from steel containing about 0.25 per cent carbon. The average tensile strength of the tubes in full section varied from 54,000 pounds per square inch for the as-welded tubes to 74,000 pounds per square inch for the hard-rolled tubes, and the compressive strengths in the axial crushing test of specimens 2½ inches long were practically the same.

The welds were tested in the hydrostatic test, the tensile test of the welds in circumferential strips, the torsion test, and the axial crushing test. In the hydrostatic test, excepting the annealed tubes, only 1 of the 30 specimens fractured in the weld, but this at a high bursting strength. Only one of the six annealed specimens fractured outside of the weld. This showed that the annealing process reduced the strength of the weld about 10 per cent below that of the base metal.

In the tensile test of the welds in circumferential strips of 2-inch tubes the longitudinal tensile strength was reached with no fractures in the welds except the annealed tubes. The strength of the weld of the annealed specimens was about 93 per cent of the strength of the base metal as determined by testing strips with the weld outside of the reduced section. The weld in the axial crushing test was shown to have the strength and ductility to fold evenly with the base metal. There were a few exceptions in which cracks showed at the weld in the outer edges of the folds. Copies of research paper 161 may be obtained from the superintendent of documents, Washington, for 20 cents.

Skyscraper Uses 300 Tons of Corrosion-Resistant Steel

(Concluded from Page 46)

up from the inside. Later the limestone piers are added.

Present plans call also for the use of the chrome-nickel alloy at the sides of the main entrance to the building and for the store fronts, as well as for the base of the dirigible mooring mast planned to extend 200 feet above the roof. The mooring mast, now definitely decided upon, will require something less than 25 tons of the corrosion resisting steel.

The light refraction of this new building medium offered the architects new and unexplored opportunities in effects, and presented entirely new and intricate problems of light and shade. But the use of the metal window framing and metal spandrels has more than a decorative purpose. It makes it possible to set the radiators into the walls, thus achieving a material saving in floor space. The actual cost of the material and installation is said to be considerably lower than if stone were used throughout, and the weight of the building is reduced in comparison with stone, according to the architects, Shreve, Lamb & Harmon, New York. About 300 tons of cast aluminum will be required for the spandrels and these are being supplied by the Aluminum Co. of America, Cleveland.

Hager Sheet Metal Co., Wichita Falls, Tex., has increased its capital from $40,000 to $50,000.

This is one of several types and sizes of Morgan-Connor Wire Machine.

It works from No. 5 gauge rod in basic and bessemer steel, and is at its best in sizes between 12½ and 16 gauge.

Output per man, which of course varies with finishing size and with bundle weight, will range from 20,000 to 7,000 lbs. per shift.

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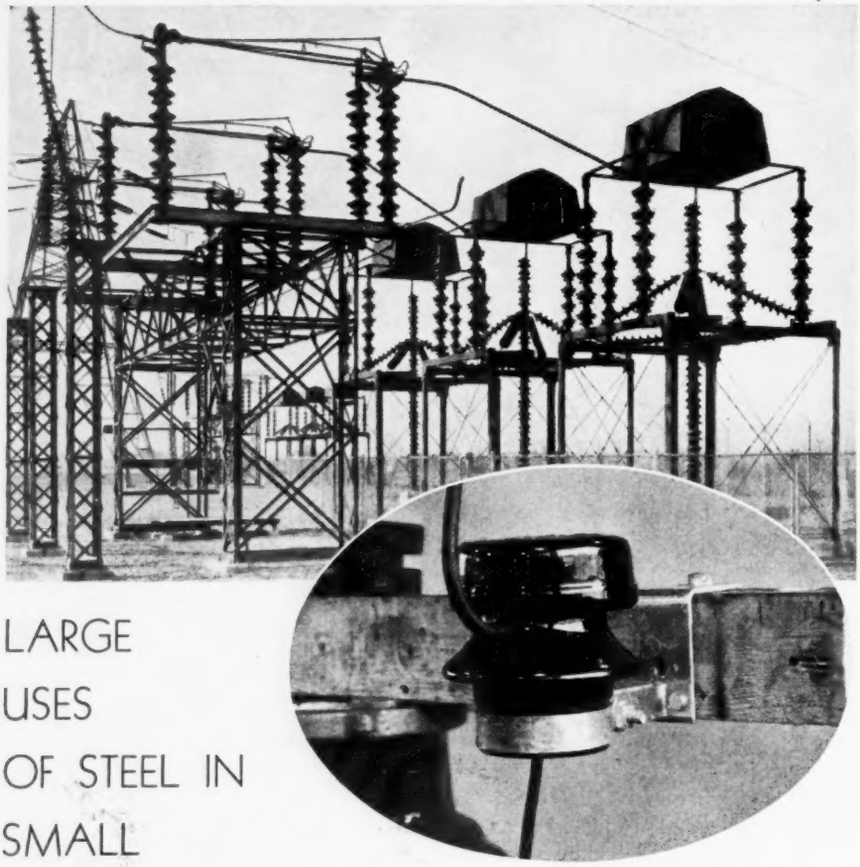

LARGE USES OF STEEL IN SMALL WAYS

Station type of lightning arrester and small autovalve arrester

Lightning Arresters Require 5000 Tons of Steel Annually

◆

172nd Article

◆

EXPANDING use of electricity has been accompanied by a growing consumption of steel as well as of nonferrous metals. Lightning arresters offer a typical example of one steel use in the electric industry.

Lines for the transmission of electric power offer a convenient medium for the passage of the high voltage of a lightning discharge to station apparatus. In this manner, transformers and other equipment at such points may be seriously damaged, and to avoid such a circumstance lightning arresters are applied to limit this high-traveling surge voltage to a value that is safe for the station insulation. This equipment can be seen frequently in the outskirts of almost all communities.

A popular type of lightning arresters is one that discharges under these abnormal voltage conditions and then becomes an insulator after the discharge so that there is no disturbance in the power circuit. This type is known as a valve type arrester.

Large and Small Units

Illustrations are shown of an autovalve arrester having a rating of 3000 volts, and of a station type arrester with a rating of 220,000 volts. Production in the United States of the small distribution arrester amounts to about 300,000 annually, while yearly output of the station type is about 1300 units.

The smaller unit uses a steel bracket weighing 2 pounds to support it, or a total annual consumption of 300 tons. Station type arresters require considerably more steel, those of the largest capacity using from 7 to 8 tons of spring steel, cast iron, malleable iron, steel sheets and steel shapes.

Total consumption steel in the manufacture of lightning arresters is close to 5000 tons annually.

Convention Calendar

Aug. 24-29—International Congress of Applied Mechanics. Third annual meeting at Royal Technical institute, Stockholm, Sweden, American representative, Calvin W. Rice, 29 West Thirty-ninth street, New York.

Sept. 9-12—British Institute of Metals. Autumn meeting at Southampton, England. G. Shaw Scott, 36 Victoria street, Westminster, London, S .W. 1, is secretary.

Sept. 10-12—Tool Foreman Supplier's association. Meeting at Hotel Sherman, Chicago. Harry W. Leighton, 565 West Washington street, Chicago, is secretary.

Sept. 10-12—Lake Superior Mining institute. Twenty-eighth annual meeting on the Minnesota Iron Ranges. A. J. Yungluth, Ishpeming, Mich., is secretary.

Sept. 15-20—Iron and Steel institute (Great Britain). Autumn meeting in conjunction with the Society of Czecho-Slovakian Engineers at Prague, Czecho-Slovakia. G. C. Lloyd, 28 Victoria street, London, E. W. 1, is secretary.

Sept. 22-26—American Society for Steel Treating. Annual convention and exposition at Hotel Stevens, Chicago. William H. Eisenman, 7016 Euclid avenue, Cleveland, is secretary.

Sept. 22-26—American Institute of Mining and Metallurgical Engineers. Meeting of iron and steel, and institute of metals divisions at Hotel Stevens, Chicago. Dr. H. Foster Bain, 29 West Thirty-ninth street, New York, is secretary.

Sept. 22-26—American Society for Mechanical Engineers. Meeting of the machine shop practice, and iron and steel divisions at Hotel Stevens, Chicago. Calvin W. Rice, 29 W. Thirty-ninth street, New York, is secretary.

Sept. 22-26—American Welding society. Fall meeting at Congress hotel, Chicago. Miss M. M. Kelly, 33 West Thirty-ninth street, New York, is secretary.

Sept.—22-26—International Railroad Master Blacksmiths association. Meeting at Hotel Morrison, Chicago.

Sept. 25-27—American Electrochemical society. Fall meeting at Hotel Statler, Detroit. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Sept. 29-Oct. 1—American Gear Manufacturers association. Semiannual meeting at Hotel Clifton, Niagara Falls, Canada. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

Sept. 29-Oct. 4—National Safety council. Nineteenth annual safety conference at William Penn hotel, Pittsburgh. William H. Cameron, Civic Opera building, 200 Wacker drive, Chicago, is managing director.

A New Heating Method that Promises to Revolutionize Industrial Heating

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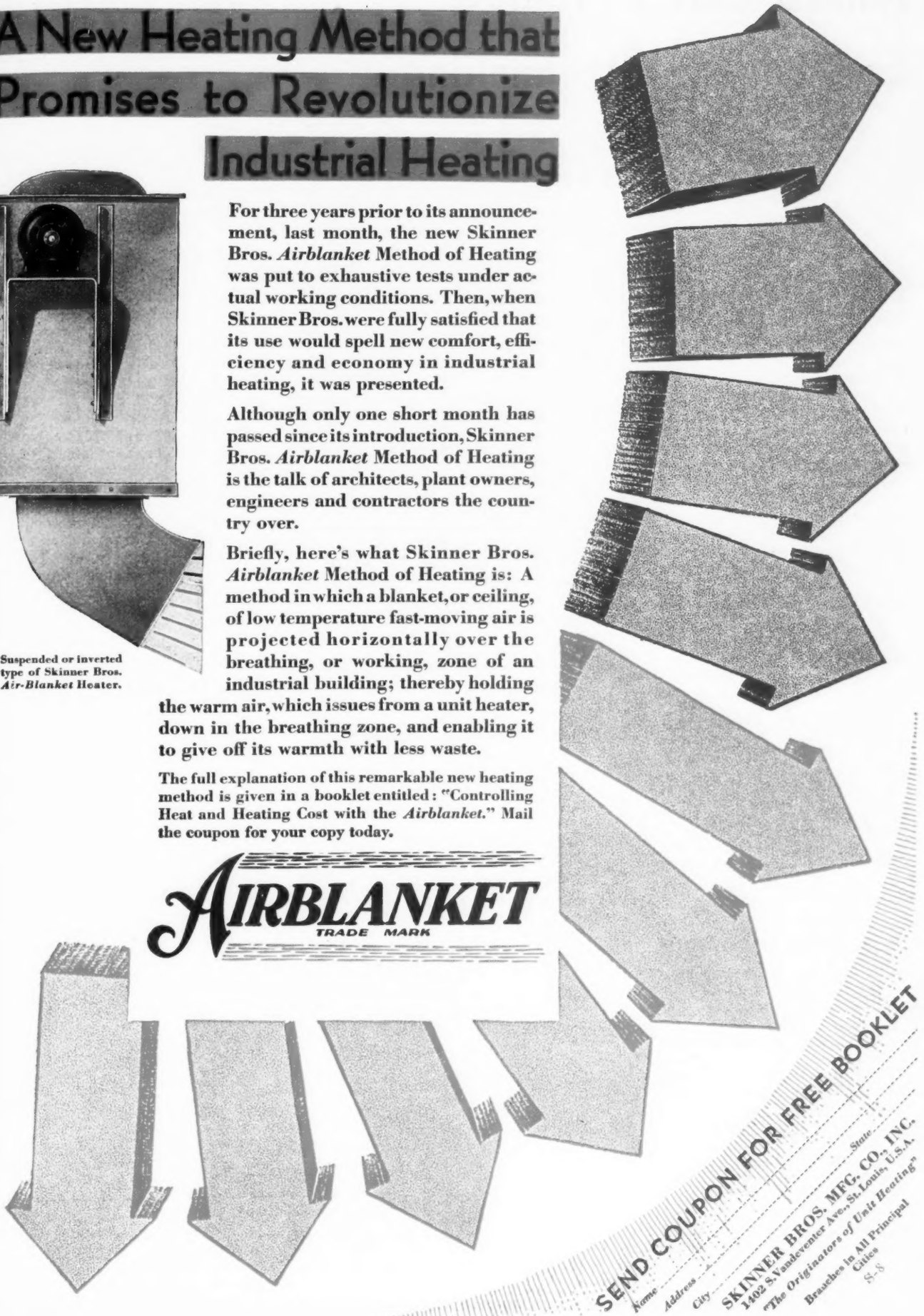
Although only one short month has passed since its introduction, Skinner Bros. *Airblanket* Method of Heating is the talk of architects, plant owners, engineers and contractors the country over.

Briefly, here's what Skinner Bros. *Airblanket* Method of Heating is: A method in which a blanket, or ceiling, of low temperature fast-moving air is projected horizontally over the breathing, or working, zone of an industrial building; thereby holding the warm air, which issues from a unit heater, down in the breathing zone, and enabling it to give off its warmth with less waste.

The full explanation of this remarkable new heating method is given in a booklet entitled: "Controlling Heat and Heating Cost with the *Airblanket*." Mail the coupon for your copy today.



Mixed Gases Promote Economy in Steelmaking

BY WILLIAM C. BUELL JR.
Consulting Engineer

Part I

ENLARGEMENT of stacks, and the increased efficiency of blowing apparatus and stoves have developed surplus blast furnace gas beyond the usual steel plan balance. This fuel may well be absorbed in the subsequent heating operations of steel manufacture, to the economic advantage of those operations. Blast furnace gas, as delivered in the mains from the cleaning apparatus, consists of about a quarter by volume of carbon monoxide; a small quantity of hydrogen or possibly methane; nearly three quarters nitrogen; and may contain a considerable quantity of suspended solid matter such as dust. In addition the gas is totally saturated with water vapor, or nearly so.

The nominal net heating value of the gas is 80 to 95 B.t.u.'s per cubic foot and the relative flame temperature is low, due to the large ratio of nitrogen and the water vapor to the combustibles. About 75 per cent of its own volume in air is needed for theoretical combustion.

In the United States, until recently, this gas, on account of its relatively poor thermal characteristics, has been considered of little or no value as a fuel, except for use under boilers and in heating stoves, and any surplus beyond plant steam-making and stove heating requirements either has been converted into extra electricity which is put on a network at a nominal return or in the absence of this outlet, dissipated.

Use of Gas Expands

In recent years the extension in the use of this gas to include metallurgical and heating operations, has been given considerable attention by engineers. Soaking pits and reheating furnaces are being operated successfully on straight blast furnace gas, open-hearth furnaces on mixed gas enriched to 225 to 250 B.t.u.'s per cubic foot, and by-product ovens on mixed gas containing a small proportion of the richer gas.

Mixed with coke oven gas, any predetermined calorific equivalent, to the ultimate of the coke oven gas, is maintained constantly through the use of any of several proportioning devices. The sucesss attained in the use of mixed gas is due in a large measure to the availability and accuracy of the automatic proportioning arrangement, even though proportioning is accomplished on a volume rather than a B.t.u. ratio.

High in Fuel Value

Coke oven gas is more than half hydrogen, more than a third other combustibles; carbon monoxide and several hydrocarbons and seldom carries more than 8 per cent of inerts. Its net heating value is about 500 B.t.u.'s per cubic foot; it is saturated completely, and requires perhaps four and a half to five times its own volume of air for theoretical combustion.

In the applications of mixed gas so far made in the open hearth it would appear that the ratios of mixing have been set arbitrarily. Since 225 or 250 B.t.u.'s per cubic foot seems to be the usual practice, it may be assumed that a gas having this thermal range produces the desired results.

Little has been written on the theoretical aspects of varying the volume ratio of the two gases. In this study it is proposed to show by the use of thermal capacity graphs what change the admixture of blast furnace and coke oven gas in differing proportions will have on the calorific qualties of the resulting mixed gas. The analyses presented in Table I are the averages of several of each gas and form the basis of further discussion.

Assuming the temperature of each gas and its air for complete combustion to be 80 degrees Fahr. and at complete saturation, 1.70 cubic feet of blast furnace gas and air and the 5.75 cubic feet of coke oven gas and air will contain, respectively, 0.05 and 0.16 cubic foot of water vapor as a result of this psychometric condition. This represents an approximate 3 per cent B.t.u. loss in the fuel through the displacement of that volume. In the subsequent charts and tables with the exception of Figs. 1 and 2, the calorific values of the gas alone and the combined gas-air mixtures are modified by 3 per cent to compensate for an average loss by displacement. The calorific values of the products of combustion are modified 6 per cent to compensate for the displacement as previously mentioned, plus an equal amount to represent the heat necessary for the elevation of this water vapor to furnace temperature and which is not recoverable in the heat salvage equipment.

Data Presented by Curves

The thermal capacities for blast furnace gas and for coke oven gas are shown in Figs. 1 and 2, respectively. The curves are constructed from data presented in Table I. Curve "A" (Heat in Products of Combustion) shows the sensible heat in the furnace gases when 1 cubic foot of the fuel is burned perfectly; or, when only carbon dioxide, water vapor and nitrogen are found as the chemical components. At a given temperature on scale "A," the contained heat is read as B.t.u.'s on scale "C."

Curve "B" (Heat in Air) gives the sensible heat in the air required for the perfect combustion of 1 cubic foot of gas. It is read as for curve "A" and is of volume to complete the heat in excess air when present, and to determine the degree of temperature elevation when preheat is employed.

Curve "C" (Heat in Gas) indi-

FUEL costs in open-hearth departments show improvement where blast furnace and by-product coke oven gas is employed for melting. In using blast furnace gas tempered with gas of high calorific values, the thermophysics of the mixture should receive proper consideration. The accompanying article on this subject is the first of two, the second to appear in an early issue of STEEL. The author, William C. Buell Jr., is a consulting engineer, Cleveland.

cates the sensible heat in the fuel itself when the temperature is above 32 degrees Fahr.

Curve "D" (Heat in Entrained Water Vapor) shows the sensible heat in the water vapor carried in the cubic foot of the gas and in the air needed for the perfect combustion of that gas when both components carry water vapor to the equivalent of complete saturation at 80 degrees Fahr. At any given

Table I

Gas Analysis and Combustion Data

(Basis: 1 cu. ft. dry gas at 32 degrees Fahr., 30" mercury)

	Blast furnace gas	Coke oven gas
Components:		
CO_2	0.120	0.016
CO	0.265	0.055
C_2H_4	None	0.023
CH_4	Trace	0.310
H_2	0.02	0.540
N_2	0.595	0.056
Total	1.000	1.000
B.t.u. per cu. ft.	92	500
Air for theoretical combustion, cu. ft.	0.70	4.75
Products of combustion:		
CO_2	0.385	0.427
H_2O	0.020	1.206
N_2	1.134	3.747
Total, cu. ft.	1.539	5.380

temperatures this promises a deduction from the calorific value of the gas other than displacement of the gas.

A casual study of these graphics develops many interesting points. If blast furnace gas or the air is to be preheated, it may better be the gas, because at equal temperatures the heat carrying capacity of

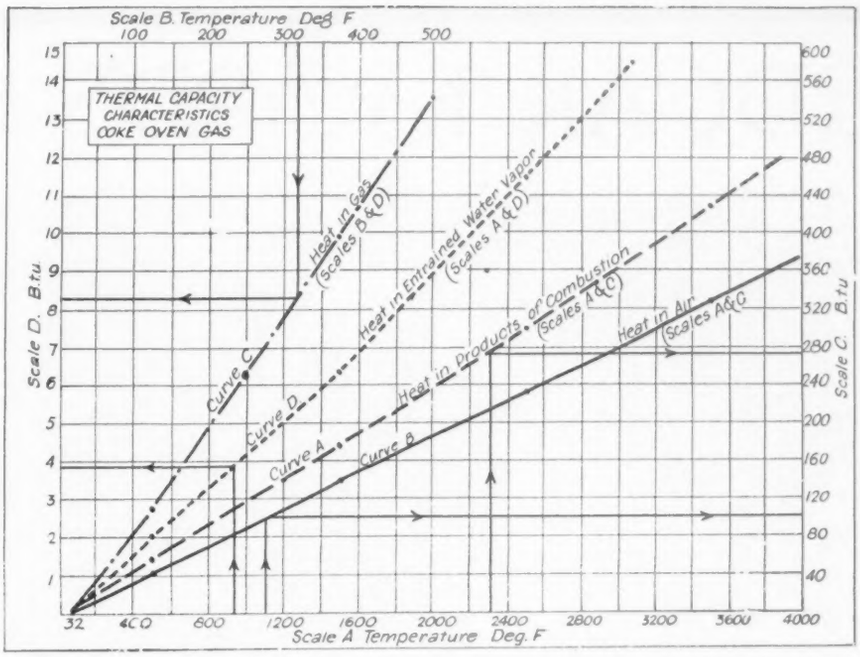


Fig. 1—Thermal capacity characteristics of coke oven gas showing B.t.u.'s generated at various degrees of heat in gas, in entrained water vapor, in air and in products of combustion

the gas is as 9.7:7.2 for the air, allowing an excess of 20 per cent for air; which is probably the minimum of air for the complete oxidation of the fuel. It will be better if both gas and air are preheated. In no event should coke oven gas be preheated because the hydrocarbons will break up and deposit lamp black on the checkers thus representing a considerable loss in fuel value. The ratio of the heat capacity of the gas at equal temperatures 13.5:44.0 for the air, shows heavily in favor of the air as a medium of preheat.

Values Are Doubtful

Theoretical flame temperatures are of little practical use because they never are approached closely in furnace practice. They given an indication of the value of the fuel as a medium of generating highly elevated temperatures but in industrial heating practice a certain degree of base elevation of temperature by means of preheat is depended upon to bring about high final temperatures, rather than the maximum to be secured from fuels of high flame temperatures.

Assuming 20 per cent excess air with blast furnace gas, correct air for coke oven gas, and saturation with water vapor, as previously mentioned, the ultimate theoretical temperature of blast furnace gas is about 2400 degrees and coke oven gas about 3800 degrees Fahr.

Probably the highest furnace temperatures in practice are 1800 and 2800 degrees Fahr., respectively. This is cold-air, cold-gas

TABLE II

Calorific Intensity of Mixed Gases

Mixed Gas, cu. ft. Blast furnace	Coke oven	B.t.u. value	Temperature, degrees Fahr. Flame	Furnace	Air for Combustion, cu. ft. Blast furnace gas*	Coke oven gas	Gas-air mixture Total	B.t.u./cu. ft.	Products of Combustion, cubic feet CO_2	H_2O	O_2	N_2	Total	B.t.u./cu. ft. in products of combustion
1.0	.....	89	2400	1800	0.84	.....	0.84	49.0	0.385	0.020	0.030	1.244	1.679	51.0
0.9	0.1	129	2700	1975	0.76	0.48	1.24	57.0	0.389	0.139	0.027	1.494	2.049	61.0
0.8	0.2	169	3050	2175	0.67	0.95	1.62	64.0	0.393	0.257	0.024	1.744	2.418	66.0
0.7	0.3	208	3250	2325	0.59	1.43	2.02	69.0	0.398	0.376	0.021	1.995	2.790	72.0
0.6	0.4	247	3450	2440	0.50	1.90	2.40	72.0	0.402	0.494	0.018	2.245	3.159	76.0
0.5	0.5	285	3550	2525	0.42	2.38	2.80	75.0	0.406	0.613	0.015	2.495	3.529	79.0
0.4	0.6	327	3600	2600	0.34	2.85	3.19	78.0	0.410	0.732	0.012	2.745	3.899	81.0
0.3	0.7	367	3650	2650	0.25	3.33	3.58	80.0	0.414	0.850	0.009	2.995	4.268	83.0
0.2	0.8	405	3700	2700	0.17	3.80	3.97	82.0	0.419	0.969	0.006	3.246	4.640	85.5
0.1	0.9	445	3750	2750	0.08	4.28	4.36	83.5	0.423	1.087	0.003	3.496	5.009	87.0
.....	1.0	485	3800	2800	.....	4.75	4.75	85.0	0.427	1.206	.....	3.747	5.380	88.0

*20% excess air.

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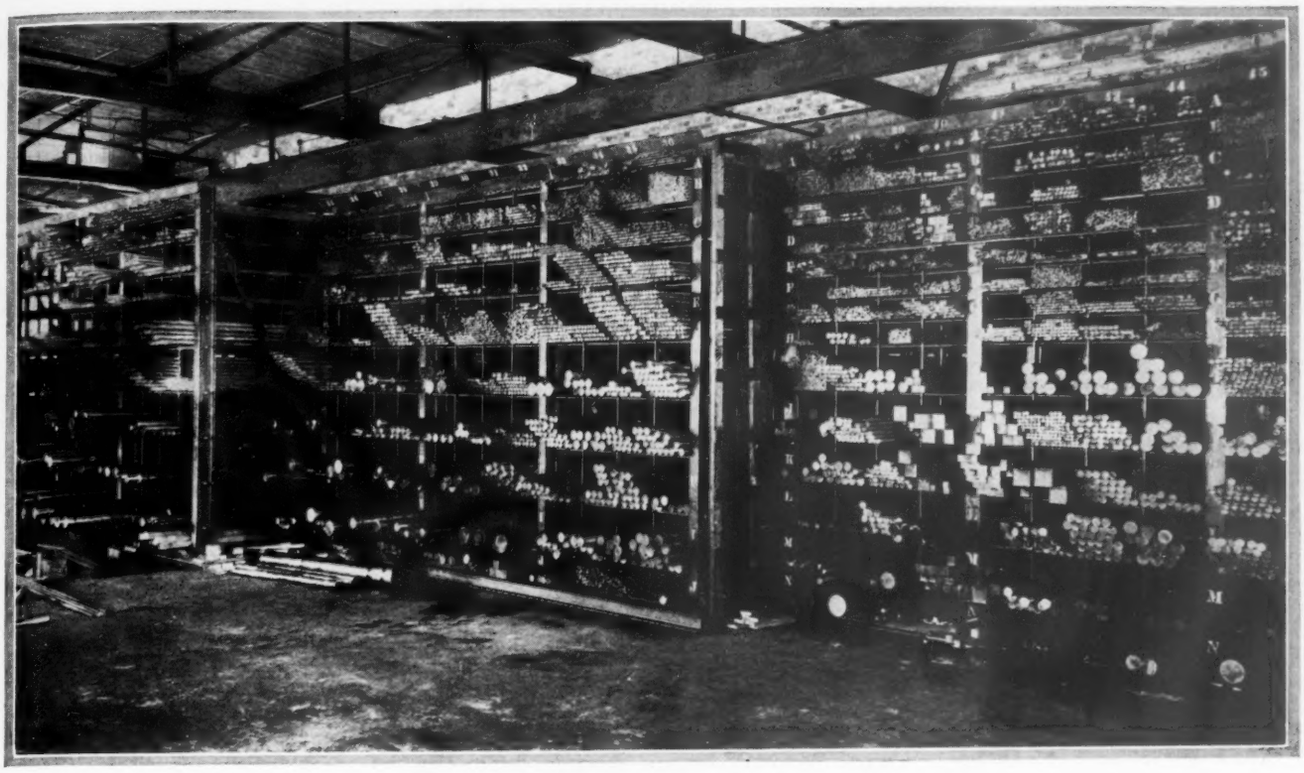

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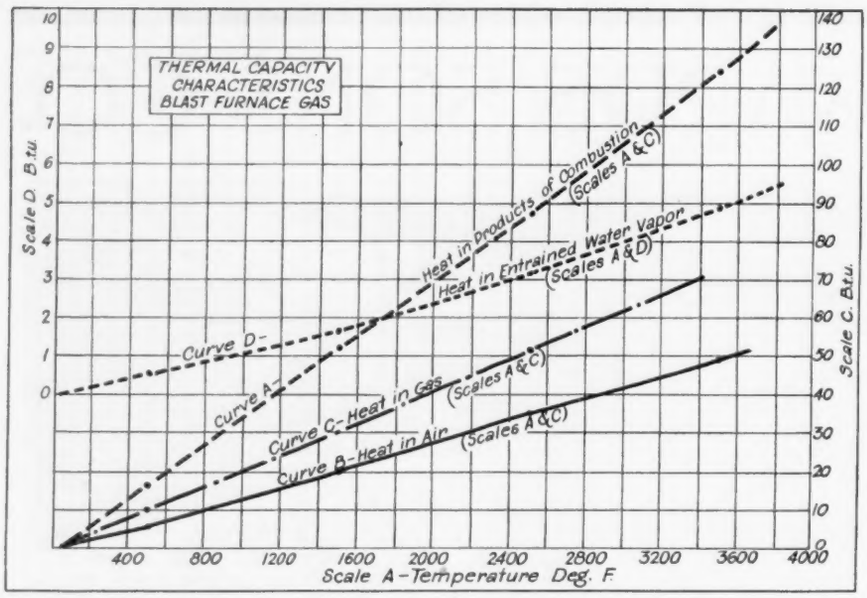
THERMAL CAPACITY CHARACTERISTICS BLAST FURNACE GAS
Scale D B.tu
Scale C. B.tu.
Scale A-Temperature Deg. F
Heat in Products of Combustion (Scales A&C)
Heat in Entrained Water Vapor (Scales A&D)
Curve D-
Curve A-
Curve C-Heat in Gas (Scales A&C)
Curve B-Heat in Air (Scales A&C)

Fig. 2—Thermal capacity characteristics of blast furnace gas showing heat generated under similar conditions as coke oven gas in Fig. 1

practice and preheat will elevate these figures to the extent of the mean temperature of the air-gas mixture.

Blast furnace gas being without commercial field or value, other than in the plant where generated, and coke oven gas being a readily salable commodity at a profitable price, the problem in economics is to use the most blast furnace gas and the least coke oven gas necessary to develop the temperature conditions required for a particular operation.

The purpose of subsequent curves is to develop a method of finding the flame and furnace temperature of a mixed gas of given ratio and the elevation of the temperature of the air-gas mixture from preheat. This permits maximum furnace temperatures to be foretold, and proper size regenerators or recuperators to be premised. The thermal capacity curves of mixed blast furnace and coke oven gas are shown in 10 per cent increments of each gas. These curves are computed on the basis that blast furnace gas is burned with 20 per cent excess air and coke oven gas with the theoretical air of perfect combustion.

The unit employed in all cases is 1 cubic foot of gas. The line E—E is that of calculated flame temperature, and the line F—F is the probable limit of furnace temperature, using cold gas and cold air, with excellent furnace combustion, chamber design and operation. Furnace temperatures in excess of those indicated must be secured by preheat of the air and, under some conditions, the gas.

Table III

Effect of Mixing on Calorific Intensity

Mixed gas, cu. ft.		B.t.u./cu. ft.			B.t.u./cu. ft.	
Blast fur.	Coke oven	Gas	Gas-air	Increase Per cent	in products of combustion	Increase Per cent
1.0	.....	89	49.0	....	51.0	....
0.9	0.1	129	57.0	24	61.0	28
0.8	0.2	169	64.0	43	66.0	41
0.7	0.3	208	69.0	57	72.0	56
0.6	0.4	247	72.0	68	76.0	65
0.5	0.5	285	75.0	76	79.0	77
0.4	0.6	327	78.0	80	81.0	82
0.3	0.7	367	80.0	86	83.0	87
0.2	0.8	405	82.0	92	85.5	92
0.1	0.9	445	83.5	96	87.0	96
.....	1.0	485	85.0	100	88.0	100

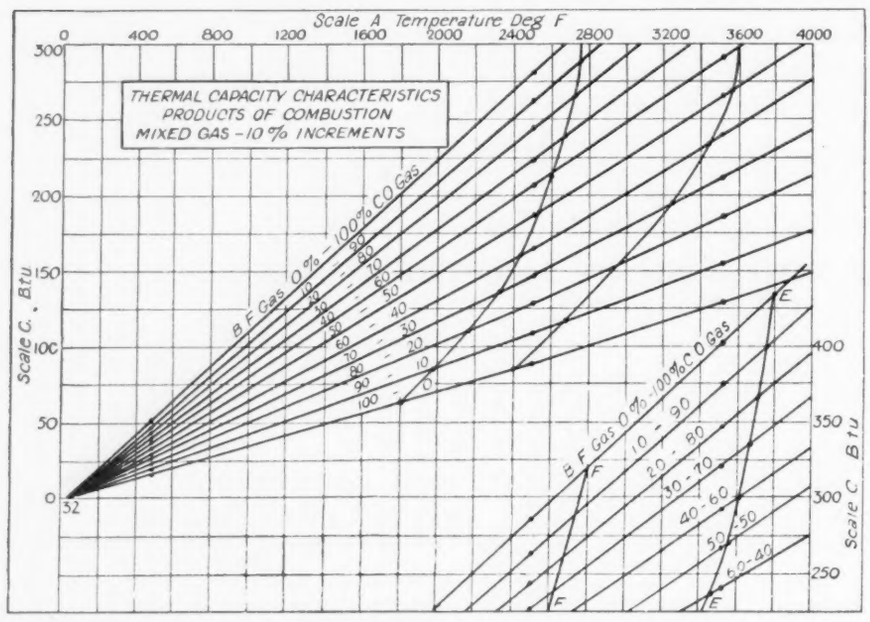
Scale A Temperature Deg F
THERMAL CAPACITY CHARACTERISTICS
PRODUCTS OF COMBUSTION
MIXED GAS - 10 % INCREMENTS
Scale C. B.tu
Scale C B.tu
B F Gas 0% - 100% C O Gas
B F Gas 0% - 100% C O Gas
E
F

Fig. 3—Thermal capacity characteristics of blast furnace and coke oven gases mixed by 10 per cent increments

Some of the more important factors of the mixed gas are given in Table II, including the rapid increase of calorific intensity through the comparatively small enrichment of the blast furnace gas with coke oven gas. While the B.t.u. per cubic foot of gas-air mixture is a fair indication of the heating value of the fuels, the B.t.u. in the products of combustion from burning 1 cubic foot of fuel gives a far truer indication, because the products of combustion are the media from which heat is transferred to the product. A study of these figures shows that with a mixture of 70 per cent blast furnace gas and 30 per cent coke oven gas, 56 per cent of the possible increase in calorific intensity is accomplished; with a 60 and 40 per cent mixture, 65 per cent; and with a 50 and 50 per cent mixture, 77 per cent. These figures are tabulated in Table III for easy comparison.

To be concluded in an early issue of STEEL.

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Dental Mach'y.
Dye-Chemical
Elevator
Farm
Fire Arms
Fire Engines
Floor Finishing
Gas Well
Gasoline Pump
Glass
Grain Grinding
Grave Vault
Greenhouse
Hardware
Harvesting
Heating
Lawn Mower
Lighting Fixtures
Meat Cutting
Meter
Motion Picture
Musical Instruments
Navy
Oil Well
Power
Printing Machinery
Railway Equipment
Refrigerating
Road Building
Scale
Sewage Disposal
Sign
Stool
Street Car Parts
Street Sign
Sugar Refining
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Talking Machine
Telephone Equipment
Textile Weaving
Toy
Tractor
Truck
Typewriter
Uniform
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Steam Drop Hammer Rated at 25,000 Pounds

SHIPMENT of what is believed to be the largest steam drop hammer ever constructed recently was made by the Erie Foundry Co., Erie, Pa., to the Henry Vogt Machine Co., Louisville, Ky. Shown in the illustration at the right, the completed hammer is rated at 25,000 pounds and has a standing height of 35 feet, 6 inches. Actual weight of ram, rod and piston is 27,000 pounds.

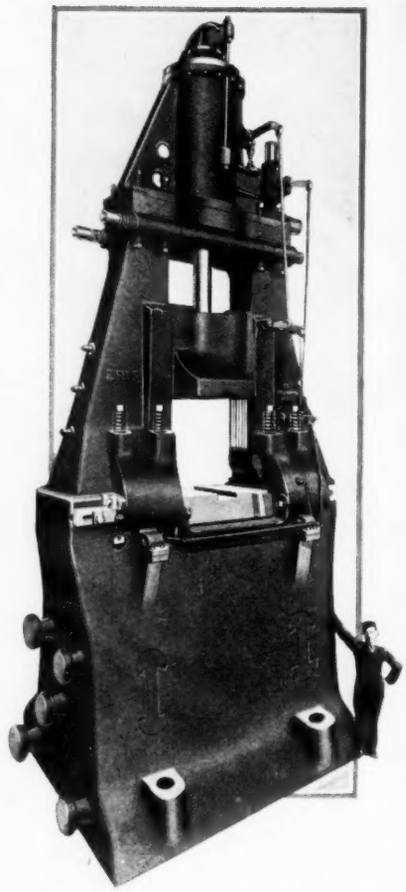
A record size for die forgings was thought to be set when the hammer recently forged an 8-inch flange gate valve for 900-pound pressure, weighing 1750 pounds. The valve was forged from a billet weighing 2000 pounds and the finished length was 31⅛ inches, height 24 inches and diameter of flange 18½ inches.

Dimensions Are Unusual

The sow block of the hammer measures 60 inches from front to back; die space in clear between the guides, 52 inches. The ram measures 54 inches, front to back. The giant hammer is provided with a 32-inch steam cylinder and the piston rod is 11 inches in diameter.

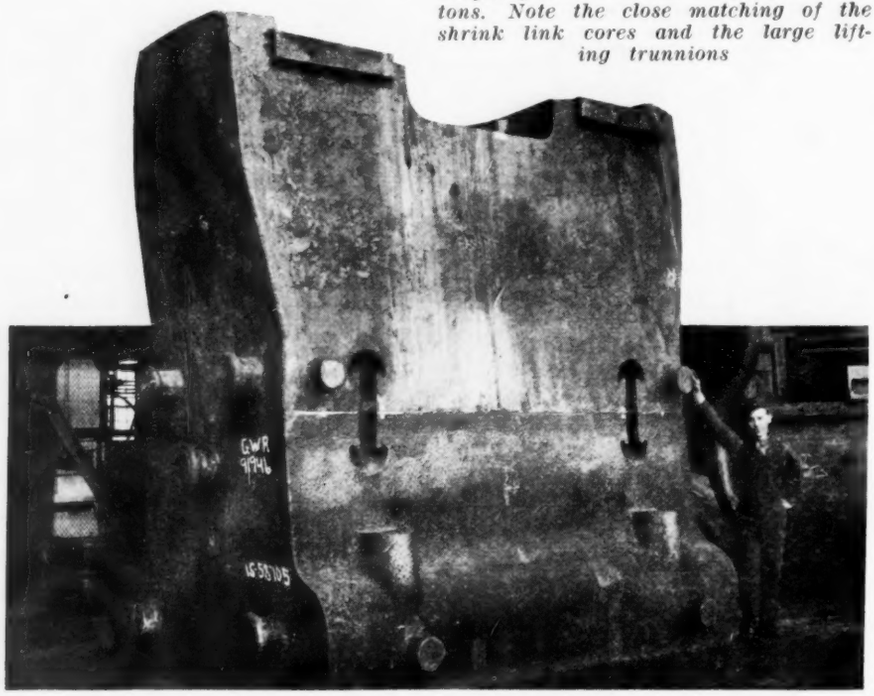
Special arrangements with the railroad company were necessary in handling the enormous anvil block, a wrecking crane and crew being needed to handle this 240-ton two-section unit. The block was cast by Wheeling Mold & Foundry Co., Wheeling, W. Va., and is shown in the illustration below. Overall dimensions of the anvil are: Height, 13 feet, 4 inches; width at the top, 14 feet; and width at the bottom, 8 feet 6 inches. The mass is solid throughout except for small shallow cores for shrink links. While the two castings were cast separately the joint between them was so nearly perfect that practically no fitting or chipping was necessary. The shrink link cores match closely, as the illustration shows. The large lifting trunnions were provided to facilitate the handling which, due to the great weight, was a difficult problem. Finished weight of the castings was 115 and 125 tons, requiring 150 and 160 tons of metal, respectively, in the casting operation. Low-carbon acid open-hearth steel was used for the blocks.

The development of this large hammer marks an important step in the progress of drop forging, and the new hammer combines all important improvements which have made for greater accuracy, including the positive guide alignment which does away with ram binding and assures a full-weight blow from the ram; extended box section frame providing greater strength and maximum bearing area; and the latest type of motion valve which stops steam leakage and waste.



The completed hammer stands 35½ feet from top of the cylinder to bottom of the anvil. Floor level after installation is flush with the top of the anvil block

The enormous anvil block for the hammer was cast in two sections, one weighing 115 *tons and the other* 125 *tons. Note the close matching of the shrink link cores and the large lifting trunnions*



Join Standards Association

The Manufacturers Standardization Society of the Valve and Fittings Industry has become a member-body of the American Standards association, and will be represented on the Standards council. The society is one of the leaders in the work on pipe and fittings and has for some time been actively co-operating in the work of the American Standards association projects. The association now includes 44 national organization, while the new member-body has 41 companies.

British Institute To Meet

Discussion of metallurgical papers, some of them presented by distinguished metallurgists from outside of England, is scheduled for the fall meeting of the British Institute of Metals in Southampton, England, Sept. 9-12. The ninth autumn lecture of the institute will be on "The Use of Nonferrous Metals in the Aeronautical Industry," by Prof D. Hanson, vice president of the institute.

Mechanical Engineers Arrange Metal Congress Program

A SERIES of technical sessions covering machine tool and metallurgical subjects will be the contribution of the American Society of Mechanical Engineers to the National Metal congress at the Stevens hotel, Chicago, Sept. 23-26. These sessions will be sponsored by the machine shop practice and the iron and steel divisions of the society. The program of Tuesday, Sept. 23, will be of interest principally to the machine tool section, Wednesday's program will be of joint interest to both groups, while the schedule for Thursday and Friday was arranged for the iron and steel division.

Dinner Also Planned

Members of the committee arranging the program were: L. C. Morrow, editor of *Industrial Engineering*, Chicago; A. J. Boynton, consulting engineer, H. A. Brassert & Co., Chicago; R. A. Fiske, associate editor of *Iron Age*, Chicago; and Willis McKee, consulting engineer, Cleveland. In addition to the eight technical sessions, the committee has provided for a dinner to be served at the Stevens hotel on Wednesday evening, Sept. 24, in co-operation with the Chicago section of the American Society of Mechanical Engineers. During several mornings opportunity will be given for the visiting engineers to inspect industrial plants in the Chicago area.

Papers to be presented and their authors are as follows:

Tuesday, Sept. 23

AFTERNOON

Phenol Materials Session

"Phenol Resinoid Molding Technique —Consideration of Engineering Factors Involved in the Replacement of Metals by Synthetic Plastics," by Leon V. Quigley, technical editor, Bakelite Co. New York.

"Production of Plastic Telephone Parts," by A. M. Lynn, Western Electric Co., Hawthorne Works, Chicago.

EVENING

Machine Tool Motor Session

"Flange-Type Motor Mounting," by Herbert Chase, McGraw-Hill Publishing Co., New York.

"The Mechanical Design of Electric Motors as Regards Standardization and Interchangeability," by J. L. Browne, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wednesday, Sept. 24

MORNING

Polishing and Repairing Session

"Automatic Polishing," by Robert T. Kent, Devine Brothers, Utica, N. Y.

"Repair of Worn Parts by Electro-Deposition of Iron," by T. P. Thomas, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

AFTERNOON

Nitriding Session

"Case-Hardening with Ammonia Gas," by Dr. Victor O. Homerberg and Dr. J. P. Walsted, Massachusetts Institute of Technology, Cambridge, Mass.

"Nitriding Analyses—Their Physical Properties and Adaptability," by R. Sergeson and M. M. Clark, metallurgical department, Republic Steel Corp., Canton, O.

Thursday, Sept. 25

MORNING

Iron and Steel Session

Report of Antifriction Heavy-Duty Bearing committee.

"General Design and Construction of Hot Saws for Cutting Heavy Structural Steel Sections," by A. B. Pearson, Carnegie Steel Co., Munhall, Pa.

AFTERNOON

"The Manufacture of Large Weldless Forged Steel Pressure Vessels," by J. L. Cox, assistant to president, Midvale Co., Nicetown, Pa.

"The Manufacture of Large Welded Pipe," by Leon Cammen, consulting engineer, New York.

"Straightening of Steel by Rolling, by J. Blair Sutton, Sutton Engineering Co., Pittsburgh.

Friday Sept. 26

MORNING

Furnace Session

"The Application of Metallic Recuperators to Industrial Furnaces," by G. W. Mantle, manager, Mantle recuperator division, Surface Combustion Co., Pittsburgh.

"Continuous Reheating Furnaces for Rolling Mills," by A. L. Culbertson, manager, furnace division, Rust Engineering Co., Pittsburgh.

"Manual Semiautomatic and Automatic Devices for the Protection Against Wind of Ore Bridges and Similar Structures," by C. O. Burton, Minnesota Steel Co., Duluth.

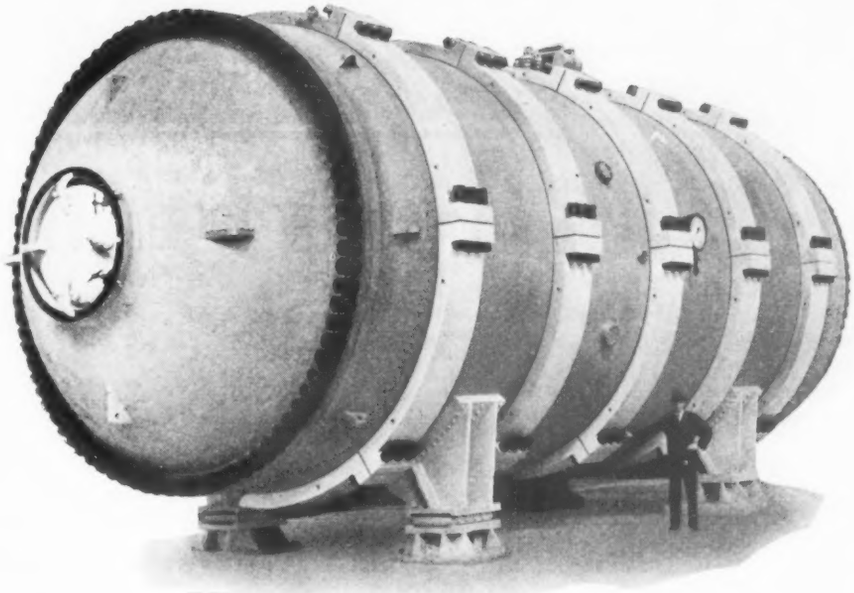
AFTERNOON

Combustion Session

"Notes on the Production, Purification and Uses of Blast Furnace Gases," by William A. Haven, Arthur G. McKee & Co., Cleveland.

"Combustion of Gas in Blast Furnace Stoves," by H. W. Paret Jr., burner department, Swindell-Dressler Co., Pittsburgh.

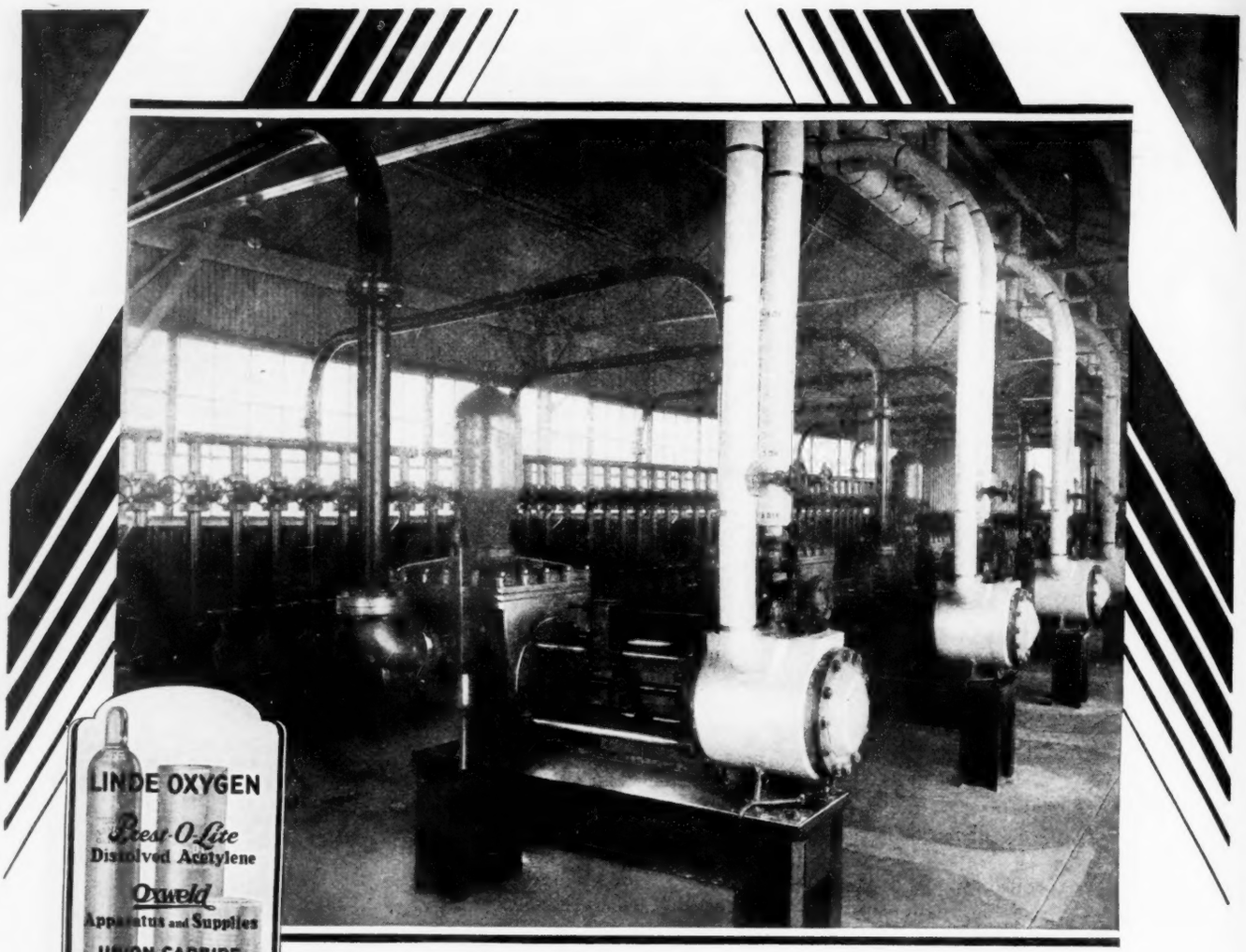
Variable Density Tunnel of Unusual Size



A VARIABLE density tunnel, said to be the largest structure of its kind ever built, has been manufactured by John Brown & Co. Ltd., Sheffield, England, and will be erected in the near future at the National Physical laboratory, Teddington. The tunnel, shown in the accompanying illustration, weighs approximately 250 tons and is intended for aircraft test work.

It is built up of four seamless hollow-rolled steel rings, each of which in the rolled state weighed 50 tons and which are among the largest seamless rolled steel rings ever to be produced. The hemispherical ends are each made of two steel castings joined together by a suitable flanged and studded joint. These castings weighed 26 tons each and were made by Thomas Firth & Sons Ltd., Sheffield. Length of the tunnel is 50 feet and internal diameter 17 feet.

A difficult feature in connection with the structure was the joining of the separate sections of the vessel. This was effected by a special form of butt strap which can be seen in the illustration. This tunnel has been subjected to and has successfully passed a hydraulic test of 550 pounds per square inch.



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New Tools Successfully Cut High-Manganese Steels

BY WALTER R. BREELER
Metallurgist, Whitman & Barnes Inc., Detroit

HIGH-MANGANESE steel generally contains 10 to 15 per cent manganese, 1.00 to 1.50 per cent carbon and the usual small percentages of silicon, phosphorus and sulphur. Nickel and other alloys sometimes are added to develop special physical properties. Metallurgically, the high-manganese steels are characterized by an unstable austenitic structure and the accompanying capacity for "work hardening."

Until recently, this tough, wear-resisting steel was considered non-machineable and parts made therefrom were either cast or forged to shape. When holes were to be placed in a manganese steel part, they were either cored, hot punched, cold punched or burned in with a blow torch. The difficulties encountered in the machining of manganese steel have retarded its wider use materially. Within the past few years, however, new tool steels, new tool designs and new heat treatments have been perfected. All of these factors, carefully balanced, have produced tools which now successfully cut high-manganese steels and open new fields for its applications.

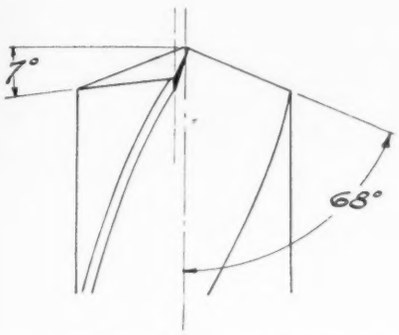


Fig. 1—Correct angles of point and clearance of twist drill ground for drilling manganese steel

Cobalt Steel Drill Required

As an example, twist drills made of cobalt high-speed steel, specially designed and heat treated, can cut manganese steel under conditions which would quickly ruin any other drill.

To drill high manganese steel successfully, a sturdy, well-proportioned tool is essential and the drilling machine must have a positive feed and speed mechanism powerful enough to drive the drill through. Tremendous pressure is exerted upon the [illegible] cutting, hence the work must be securely held. If a radial drill press is used, place the work so that maximum rigidity is assured. If possible, warm the drill point before using. This is good practice to follow for any high-speed steel drill. Some users heat up the manganese steel itself to about 400-500 degrees Fahr. While helpful, this is not absolutely necessary.

The peripheral speed of the drill should be between 12 and 15 feet per minute. A speed of 15 feet per minute should not be exceeded. The feed should be between 0.003 and 0.010 inch per revolution. For example, a 1-inch drill gives good service with a feed of 0.006 inch and a speed of 50 revolutions per minute. Neither coolant nor lubricant is to be employed.

How Drilling Should Be Done

The drill should not be allowed to idle or rub when starting a cut or after a cut has been started. For best results a hole should be drilled through in one continuous cut. Intermittent cutting such as is produced when a drill is used in a ratchet brace is not recommended. On the "break through," manganese steel has a tendency to "spin," which is detrimental to the drill. A heavy feed during this period will increase the life of the drill.

Deep hole drilling offers difficulties and materially shortens the life of a tool, due to the excessive heat generated and accumulated in the manganese steel and the drill. For example, when drilling a 3½-inch deep hole with a 15/16-inch drill, some users obtain best results by drilling down 2½ inches in one continuous cut and then continuing on through five or six other holes this same depth. By the time six holes have been drilled, the metal around the first hole is cool enough to permit the drill to start a new cut and drill 1 inch deeper without heating to the breakdown point. On deep cuts, some users have cooled the drill point in oil between holes. The practice of starting a new cut in a drilled hole or cooling the drill in oil are special exceptions to the general recommendations made above, but in the cases mentioned this is practical.

It is good economy for the operator to note the condition of the cutting edges and corners as drilling proceeds. If the corners are dull for 1/16 to ⅛ inch back it is advisable to remove the drill and regrind, even though it apparently is cutting satisfactorily. By so doing, maximum holes per drill will be obtained rather than a few more holes per grind.

Point Angle and Clearance

In grinding the special drills for manganese steel, the point angle is 68 degrees, the cone angle is 120 degrees, and the lip clearance 6 degrees to 8 degrees as shown in Fig. 1. To reduce the rake angle and give give a stronger cutting edge, a flat section is ground on the lips, as shown in Fig. 2. This grinding operation should also thin the web down to about one-half, or to about one-eighth of the diameter of the drill. Care must be taken not to produce a negative rake by blunting the edge. This newly ground face should be parallel to the axis of the drill, or in other words, producing a rake angle which is less than 90 degrees. About one-half of the width of the margin is removed in this operation.

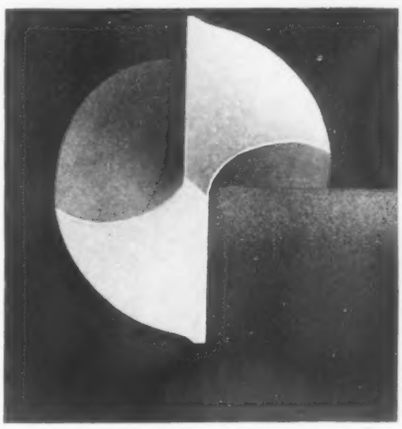
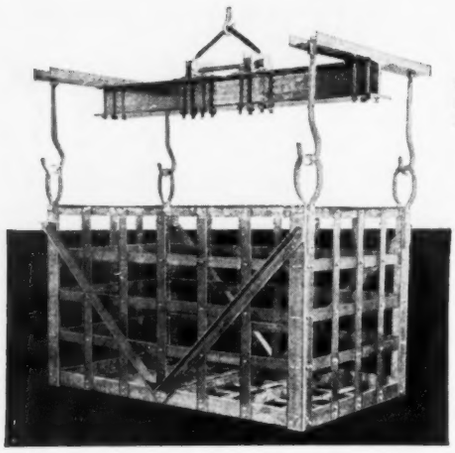


Fig. 2—Method of blunting cutting edge to reduce rake angle

Cobalt high-speed steel drills should be ground with the same wheel and the same care as is the recommended practice for regular high-speed drills. In grinding, care must be taken not to discolor or burn the drill edges and the drill must not be placed in cold water to cool.

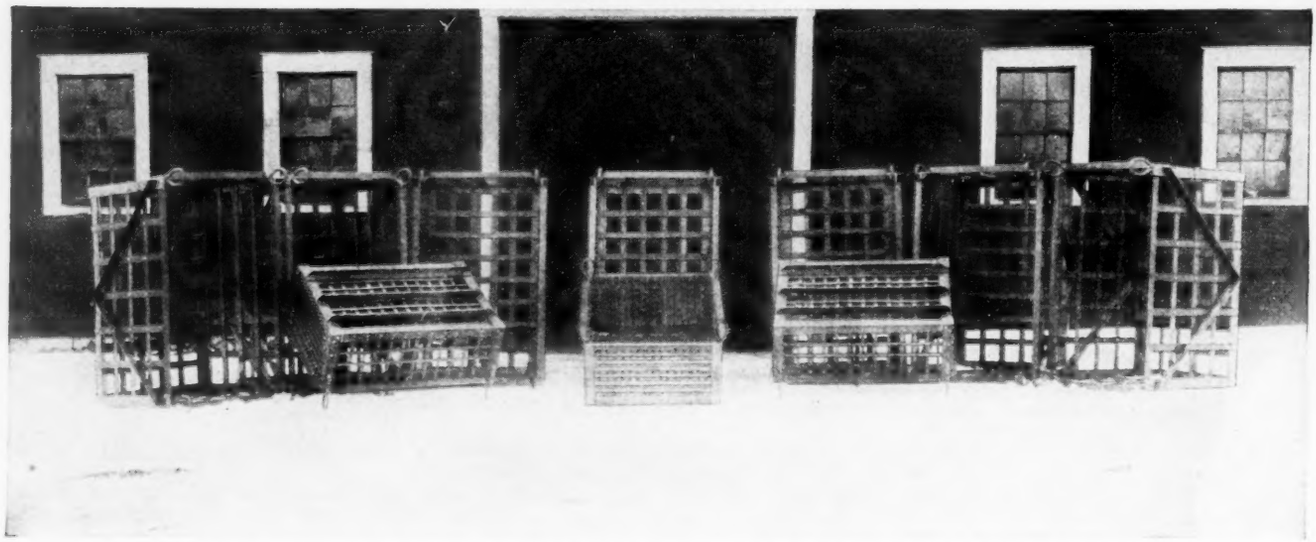
The movement of manufactured iron and steel east bound through the canals at Sault Ste. Marie, Mich., and Ont., in June amounted to 12,556 tons, and of pig iron 3490 tons. Shipments of manufactured iron and steel west bound totaled 6509 tons.



Close-up of one of the Monel Metal pickling crates specially constructed for pickling steel forgings to be used in building farm tractors.

No 41
Pickling Equipment that passes the test of service

New European Tractor Plant equipped with Monel Metal pickling crates



Basket-type Monel Metal pickling crates specially designed and constructed by WEAVER BROS. CO., Adrian, Mich. These baskets are the first unit of a modern pickling department in a large European tractor plant now under construction.

THE Monel Metal pickling baskets pictured above are destined for service in a large European plant. They were specially designed and constructed for processing crankshaft forgings and other parts of farm tractors.

The choice of Monel Metal was dictated by the need of these remote manufacturers for equipment that could be relied on to render years of dependable, trouble-free service under severest conditions. They required a material that possessed high resistance to the corrosive action of acid pickling solutions, combined with great strength and uniform structure—a material capable of withstanding the punishment of hard knocks and heavy loads without need of frequent repair and replacement.

That Monel Metal meets these requirements better than any other available material has been proved time and again in pickling plants all over the world. That is why the leading metal processors, both here and abroad, are modernizing their pickling departments with Monel Metal equipment.

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INCO MONEL METAL

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

USES:

Aircraft Materials

Significant portions of a number of papers presented at the symposium on aircraft materials at the annual meeting of the American Society for Testing Materials at Atlantic City, N. J., in June; in Mechanical Engineering, August, 1930, *p.* 781, 6 *pp.*

Highlights of papers and discussion heard at the symposium on aircraft materials are presented, covering such subjects as ferrous metals, light alloys, textiles, prevention of corrosion, aircraft finishes, materials of construction in aircraft engines, failures of aircraft engine parts and the causes, welding, and specifications and material control. Indicating the high requirements demanded of aircraft materials one speaker pointed out that "there is perhaps no industry in which an exact knowledge of the properties of materials of construction is more necessary. Each individual part must be completely dependable and yet must be reduced to the lowest possible weight. Factors of safety must be ample, but factors of ignorance negligible."

—STEEL 8-7-30

Aircraft Dock Design

Study of loads and stresses on Goodyear Aircraft dock, by Wilbur J. Watson, in Engineering News Record, July 24, 1930, *p.* 135, 4 *pp.*, 5 *illusts.*

Wind studies formed an important part in the design. In a building which is to house aircraft it is essential that the structure itself cause the least practicable interference with normal wind currents. Model tests were made in the wind tunnel of the Daniel Guggenheim school of aeronautics at New York university. The general design was carried out along lines originally proposed in the Goodyear-Zeppelin Corp. This design had important aerodynamic advantages and also proved economical in the use of steel. In general, the structure consists of a series of eleven parabolic arches spaced 80 feet on centers and connected by a system of vertical and horizontal truss tracing.

—STEEL 8-7-30

Corrosion

Foiling as a protection against corrosion, by Harry F. Perkins in the Oil and Gas Journal, May, 1930, *p.* 31, 2 *pp.*, 6 *illusts.*

The application of metal foil by means of adhesives as protection against corrosion is discussed. Foils of aluminum, lead, zinc, tin, magnesium, copper, brass, nickel, and Allegheny metal—the last four in narrow widths only—are used for this purpose. Much trouble has been experienced in the past by trying to stick metals to materials having a different coefficient of expansion by means of hot tars and asphalts. The author deals in a general way with the development of adhesives and presents curves showing their characteristics. He adds, however, that these curves mean little except to show what his organization has done.

—STEEL 8-7-30

Hard-Facing Process

Description of the process and uses of the hard-facing metal, by R. L. Lerch, in Welding, July, 1930, *p.* 613, 3 *pp.*, 6 *illusts.*

Early tests consisted of welding a layer of hard metal on the wearing and cutting edges of oil well drilling tools. It was found that a ⅛-inch thickness of the hard metal on the cutting and reaming edges of fishtail bits prolonged the life two or three times. The expense of the hard facing and of applying it was more than offset by this added cutting life. The large steel plants throughout the country are also making savings in the same way. Hard facing is prolonging the life of hundreds of parts.

—STEEL 8-7-30

Mass Production

The contribution made to mass production by modern material handling systems, by J. E. McBride, in Black and White, E. F. Houghton Co., August, 1930, *p.* 17, 5 *pp.*, 2 *illusts.*

Consideration is given to the vital effect of conveyor systems, particularly in making possible modern motor cars. Development of the system from early assembly conveyors to complete systems from 500 to 1000 feet long is traced. Use of conveyors is followed through in the building of a motor, from foundry to test block. Eight major benefits from conveyor systems are explained. In closing, a prediction is made that conveyors sometime may replace street railway cars.

—STEEL 8-7-30

Nickel Steel Forgings

Manufacture, uses, analyses, heat treatment and properties of nickel alloy steel forgings larger than 4 *inches diameter or equivalent section, by Charles McKnight, in Transactions of the American Society for Steel Treating, August,* 1930, *p.* 129, 18 *pp.*, 5 *illusts.*, 3 *tables.*

Large forgings constitute an important and constantly increasing field for alloy steel, but information regarding them is not nearly as complete or as readily available as information pertaining to other forms of alloy steel. For example, data published by the Society of Automotive Engineers on the properties, analyses and heat treatments of alloy steel are standard, but are not applicable to large forgings as they are based on tests made on 1-inch bars.

This article deals briefly with the manufacture, uses, analyses, heat treatment and properties of nickel alloy steel forgings larger than 4 inches diameter or equivalent section. It does not convey helpful knowledge to the manufacturer of forgings, principally because most of the material came from that source. To the prospective purchaser and user it may be helpful.

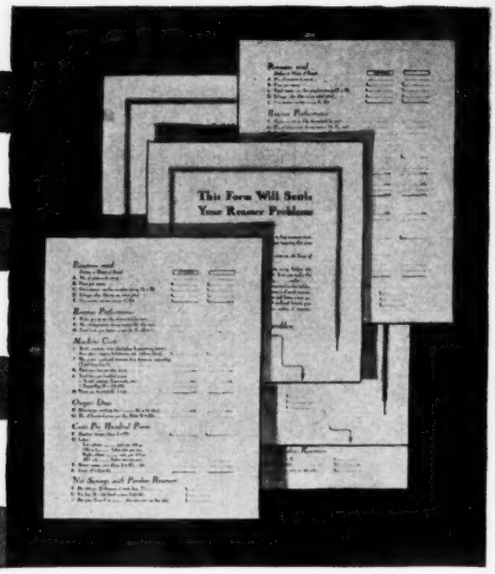
—STEEL 8-7-30

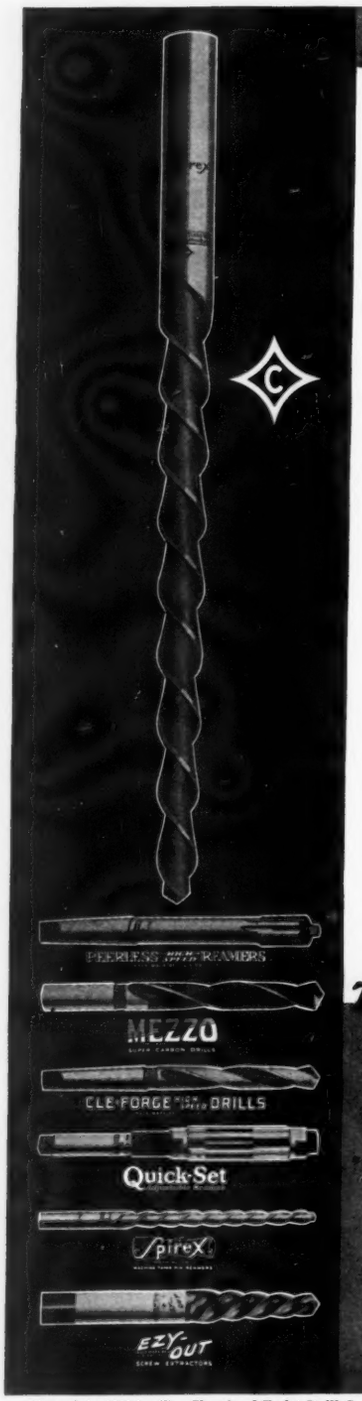
Wire Rope

Facts about wire rope which have proved helpful in securing new orders, by H. H. Holinstat, in Mill Supplies, July, 1930, *p.* 22, 2½ *pp.*, 4 *illusts.*

The largest proportion of wire-rope business handled by any industrial supply house has to be sold by a man who thoroughly understands the wire rope business. Investigate the causes for excessive wear if wire rope is not proving satisfactory. Get the help of a factory salesman rather

ARE YOU SIGNING AWAY DOLLARS FOR REAMERS THAT THESE FORMS MIGHT SAVE?





Scientific purchasing is based on known performance costs.

Unless you know exactly what it costs to ream a hole with various makes of reamers in your plant, you may be signing away dollars that could be saved.

Take the case of a large electric truck manufacturer. Much difficulty had been experienced in finding a satisfactory reamer for a particularly hard job. Finally, the plant superintendent decided to get the true facts by means of a "cost-per-hole" test. Spirex High Speed Machine Taper Pin Reamers were matched against regular taper pin reamers. When the final results were computed, the plant superintendent found that Spirex averaged 300 holes per reamer to 23 holes for the straight fluted reamer. Savings through the use of Spirex amounted to $2.72 per 100 holes. Spirex reamers performed the same work for $0.38 that straight fluted reamers had formerly performed for $1.00.

There no longer need be any uncertainty or risk in the purchase of reamers. Our special test makes it possible to conduct a "cost-per-hole" test in your own plant comparing any reamer, *hole for hole* with Spirex Reamers.

We can quote you scores of cases where economies amounting to hundreds, even thousands of dollars have been brought to light by the "cost-per-hole" test.

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Spirex Machine Taper Pin Reamers are revolutionizing pin hole reaming. Due to special Spirex construction, chips do not tend to pack in the flutes. Costly breakage is practically eliminated. In one cost-per-hole test Spirex produced 88,000 holes without a break.

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than let misunderstanding develop over the quality. It pays to know the men who handle the wire rope.

—STEEL 8-7-30

FABRICATION:

Crane Production Methods

Application of continuous-production methods to crane building, by E. Bogatsch, in Engineering Progress, July 1930, *p.* 192, 4 *pp.*, 9 *illusts.*

The new plants, sheds, and cranes built at No. 2 Dock of the Port of Bremen, have aroused much interest in European technical circles, not only with regard to their structural design, but also on account of the speed with which they were constructed. The saving in time, particularly in the case of the cranes, was effected by the employment of modern continuous-production methods both in the shops as well as in the erection of the equipment on the site.

The method as adopted, and described, proved to be highly satisfactory, the cranes being dispatched and assembled within 15 weeks. The order involved the early delivery of 24 luffing cranes with a radius of 20 to 62½ feet and a lifting capacity of 3 tons. The chief difficulty met with in applying continuous-production methods to constructions of this kind consists in economically adapting established methods to constructional parts which, while comparatively few in number, nevertheless consist of many different individual parts requiring considerable machining.

—STEEL 8-7-30

Ford Crankshafts

How Ford finishes crankshafts, discussed in Abrasive Industry, August 1930, *p.* 18, 5 *pp.*, 8 *illusts.*

The crankshaft of a modern automobile engine is one of the most important units. This article describes the important part played by modern grinding in the production of model A Ford crankshafts at the Dearborn plant. More than 200 grinding machines are engaged in this work, and each shaft has nine ground fits.

The article touches upon the methods of rough turning and conveying. Then the grinding operations are followed through. Grinding is followed by a honing process and the surfaces are then finished in a machine using 320 grit alumina paper. It is pointed out that the limits for accuracy on pins and main bearings are 0.00025-inch, an extreme even for fine tool work. The article concludes with a description of the dynamic balancing of the crankshafts carried out after the polishing operation.

—STEEL 8-7-30

Machining Malleable Iron

Discussion of factors affecting the machinability of malleable cast iron, by H. A. Schwartz, in Transactions and Bulletin of the American Foundrymen's association, July 1930, *p.* 210, 27 *pp.*, 6 *charts*, 4 *tables.*

Considerable difference of opinion exists as to whether or not high-carbon malleable cast iron is more easily machinable than low-carbon material metal. The common points of view of both schools of thought are examined and compared. The author confined his tests to metal of an analysis at least comparable with the usual commercial irons. The test procedure decided upon was one which measured tool stress at given feeds and cutting speeds. Tests were made under which were measured (1) the torque and thrust of a drill advancing at constant speed and (2) the feed and torque of a drill advancing under constant pressure. Corroboratory experiments for other machining methods, turning and threading were carried out on a limited scale.

The problem for solution was stated to be the determination of whether any relation exists between machinability and tensile strength in malleable iron. From results of tests on a selection of 14 different specimens the author concludes that the machinability of malleable iron, as measured by drill testing is largely determined by carbon content, and that the threading tests are of general interest only and cannot be given too much weight. Indications from the turning tests showed that in the outer 1/32-inch of the castings the results were so erratic as to permit no general conclusions. Observations are recorded showing even well-marked exceptions to the expected relations that outer skin is more difficult to machine than the heart.

—STEEL 8-7-30

Rolling Plastic Materials

Results of a thorough, practical and mathematical analysis of what takes place when billets are rolled, with practical applications of this data to rolling mill design, by F. G. Gasche in Iron and Steel Engineer, June 1930, *p.* 325, 15 *pp.*, 9 *illusts.*, 1 *table.*

The author points out that prior to 1906 no precise experimental data concerning plastic rolling operations was available. With the development of motor drives such data became necessary, but after the expenditure of much time and money on tests the resulting data appeared to be inconsistent and of but little practical value.

The author assumes the rolling operation to be the aggregate of several mechanical actions between moving surfaces, combined with internal resistances to change of shape of the plastic material. While the first are capable of relatively simple mathematical analysis, the latter is almost beyond the limits of such analysis.

In spite of the several and formidable variables, Mr. Gasche tackles the subject and by means of calculus and carefully made diagrams, arrives at logical and useful conclusions. Although the derivation of his formulas involves rather deep mathematical work, he makes the final results reasonably simple and workable. By concrete illustrations he shows how the results can be applied to practical design and practical rolling problems, and the diagrams and tables simplify such practical applications.

—STEEL 8-7-30

PRODUCTION:

From Ingot to Rail

Rudimentary details in processing steel from the ingot form to the finished rail, in Gary Works Circle of the Illinois Steel Co., July 1930, *p.* 7, 2 *pp.*, 3 *illusts.*

A heat of steel is followed through the soaking pits, 40-inch mill, blooming mill, shears, roughing mill, hot-saw and on to the hot bed where the finished rails are inspected and then straightened, drilled and measured for length. Only essential parts of each step are enumerated. A graphic illustration of the development of rail sections from the strap rail of 1808 to the 135-pound T-rail of 1910, is included.

—STEEL 8-7-30

Heat Saving

A description of the methods which may be used to save heat in industrial operations, by Fred M. Reiter, in Industrial Gas, July 1930, *p.* 17, 3 *pp.*, 4 *illusts.*

Heat can be lost from a process by improper application of fuel; waste in the products of combustion through vents; heat losses through furnace parts—radiation, conduction, etc.; heat carried away by the hot materials removed from furnace; use of cold air for combustion; fuel losses due to poor combustion and improper firing; poor furnace control, excessive temperatures, etc.; low load factor; and structural de-

fects and operating conditions. While economy of heat almost invariably signifies low operating costs, there is usually a happy medium beyond which the pursuit of the truant B.t.u. may not be worth the expenditure. The article classifies the general methods of saving heat as follows: More efficient fuel utilization; reduction in waste heat; process of heat exchange; operating conditions; and structural features.

—STEEL 8-7-30

Steel Casting

Results of an investigation of the action of molten steel in a sand mold, by P. L. Goodale, in Foundry, Aug. 1, 1930, *p.* 93, 2 *pp.*, 3 *illusts.*

It is self-evident that the burning of liquid steel occurs on its surface, when it is in contact with the atmosphere. Since the sand mold for a casting is permeable, atmospheric pressure supplies the requisite oxygen for combustion of some of the steel cast in it. When molten steel is poured into a mold constructed so that a surface of the liquid metal is exposed to the air, certain phenomena always manifest themselves. The incandescent iron burns at the surface, combining chemically with the oxygen, forming iron oxide.

—STEEL 8-7-30

MISCELLANEOUS

Nitrided Steel

Measuring hardness and thickness of the nitrided case, by Edward G. Herbert, England, in Mechanical Engineering, June 1930, *p.* 597, *pp.* 4 *illusts.*, 4 *tables.*

Nitrided steel varies greatly in hardness, but the range of hardness is generally above that of any file, while the thickness of the case is generally much less than that produced by carburization.

A technical paper by Mr. Herbert and Paul Whitaker describes the "differential process" for measuring the hardness and thickness of the case on carburized steel. This process consists in making two different hardness measurements and subtracting one reading from the other. The first reading gives the hardness, and the difference gives the thickness of the case. The primary tests is made with the Herbert type pendulum hardness tester and gives the true hardness of the case unaffected by the thickness. The secondary hardness test is usually the brinell test. Thus, by converting the pendulum reading to the equivalent brinell number and substracting from it the apparent hardness number given by the brinell test, a number is obtained, called the "differential," which by reference to published tables or by calculation gives the case thickness.

—STEEL 8-7-30

Corrosion Prevention

Prevention of rust and corrosion during storage, by Bernard Jeffs, in Black and White, E. F. Houghton Co., August 1930, *p.* 15, 2 *pp.*, 1 *illust.*

It is pointed out in this article that rust and corrosion during storage are serious menaces to both manufacturer and user of highly polished parts. In spite of utmost care store room air contains corrosive fumes, gases and humidity that induce corrosion and stains.

Danger from acids in petrolatum are mentioned. Special treatments for gages, taps, milling cutters, razor blades, cutlery, ornamental hardware, etc., are discussed.

—STEEL 8-7-30

Boiler Scale

An engineering problem of increasing importance, the formation of scale rapidly reduces the efficiency of all types of boilers. The problem is discussed by Everett P. Partridge, in a research bulletin of the department of engineering research, University of Michigan.

James Watts' engine at the time of the American Revolution operated under a steam pressure of 5 or 6 pounds; by 1900 boiler pressures had risen to 200 pounds; while today, particularly in Europe, boilers are being installed which will operate under steam pressure of 3200 pounds per square inch. This enormous increase in pressure places added emphasis on the necessity of eliminating boiler scale or removing it after its formation. The bulletin discusses the thermal effects of boiler scale; the constituents of the scale; its formation; and the various existing methods of preventing scale formations in boilers.

—STEEL 8-7-30

Lubrication Research

Synopsis of an address by Mayo D. Hersey, dealing with some of the major problems of lubrication research, delivered before the Detroit section of the American Society of Mechanical Engineers in February; in Mechanical Engineering, August 1930, *p.* 772, 2½ *pp., bibliography of* 40 *references.*

Major problems confronting lubrication research today may be classified as: (1) Measurement and calculation of friction, (2) effect of running in, (3) effect of clearance and length, (4) measurement and calculation of load capacity, (5) pressure distribution in the film, (6) temperature of the film, (7) thin-film lubrication, and (8) thick-film lubrication. Each of these subdivisions is considered and facts bearing on their determination, appearing in the technical literature, are pointed out.

—STEEL 8-7-30

Production Equipment

Pictorial presentation of modern equipment at work, in Industrial Engineering, July 1930, *pp.* 338-346, 351-360, 365-373 *and* 377-384, 37 *pp.*, 112 *illusts.*

Recent photographs taken in a great many industrial plants and on construction work showing the most recent developments in industrial equipment as they appear while in use. The field covered includes mechanical power drives, lubricating, materials handling, air conditioning, lighting, service, heating and, motors, and controls. Entirely pictorial with all explanation in the form of captions.

—STEEL 8-7-30

Steel Castings

Factors involved in the selling of steel castings, by W. H. Worrilow in the Steel Founder, July 1930, *p.* 27, 2½ *pp.*

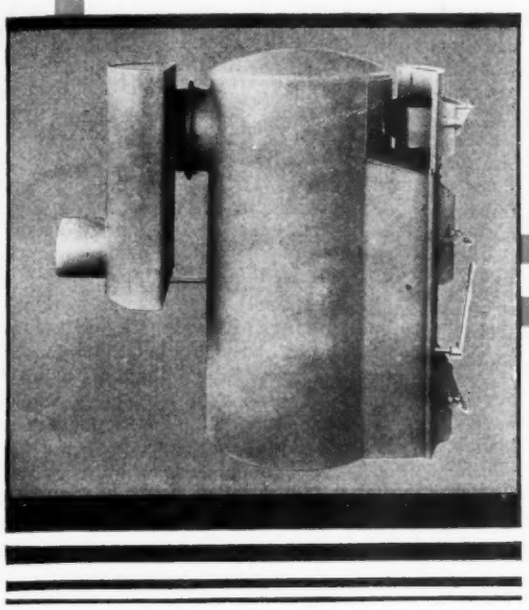
Intent upon reducing costs of foundry operations and turning out high tonnages of castings the steel foundryman has been lax in attention to merchandising methods. The article discusses the fundamentals of selling and elaborates on them. A sale to be mutually advantageous must satisfy the buyer and the seller. The seller's first thought should be of the buyer. Is his credit good? Are his specification requirements reasonable? Is he willing to pay a fair price for his castings?

Too much concentration on tonnage results in a number of evil effects—low sales prices, inferior castings, poor deliveries, disputed claims, bad reputation and a lowering of the whole tone of the plant and industry. The profitable selling of steel castings is based on two principles: A fixed price and a price for individual pieces. One of the greatest curses of the business has been unstable prices.

There has been a big change coming over the steel foundry business the last few years as the realization is becoming made that the job of selling steel castings at a profit is one that demands the best thought and energy of executive and salesman.

—STEEL 8-7-30

YOUNGSTOWN SHEETS lower FABRICATING costs



A welded furnace made with Youngstown steel sheets.

ANY product that is made from steel sheets can be fabricated more economically from Youngstown sheets. Because they are ductile, easy to form, easy to cut and easy to weld, they produce a better finished product at a lower cost.

Youngstown sheets are full weight, accurately rolled and sheared, absolutely uniform, and are manufactured from only the finest grade of steel.

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CHICAGO—Conway Bldg.
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CLEVELAND—Terminal Tower Bldg.
DALLAS—Magnolia Bldg.
DENVER—Continental Oil Bldg.
DETROIT—Fisher Bldg.
KANSAS CITY, MO.—Commerce Bldg.
MEMPHIS—P. O. Box 462
MINNEAPOLIS—Andrus Bldg
NEW ORLEANS—Hibernia Bldg.
NEW YORK—30 Church St.
PHILADELPHIA—Franklin Trust Bldg.
PITTSBURGH—Oliver Bldg.
SAN FRANCISCO—
55 New Montgomery St.
SEATTLE—Central Bldg.
ST. LOUIS—525 Louderman Bldg.
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New Books Worth Reading

SCIENCE ECONOMICS BUSINESS

Metals Handbook Published in Second Edition

National Metals Handbook, 1930 edition; cloth, 934 pages, 4½ x 7 inches; published by American Society for Steel Treating, Cleveland; and supplied by STEEL for $10 plus 15 cents postage; and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 50s, postage extra.

The first edition, published in 1928, was known as the *A. S. S. T. Handbook*, but its name has been changed to the *National Metals Handbook* to describe the purpose and scope more clearly. In the first edition the content was made up essentially of recommended practices, metallurgical data and other important information which the American Society for Steel Treating had collected over a period of several years. Wide popularity which the book received made it necessary to prepare a second edition containing new recommended practices, revised recommended practices and new features.

Included in the *Handbook* are 21 entirely new articles on steel and allied subjects comprising 146 pages. The nonferrous section has been enlarged by the addition of 27 new articles comprising 126 pages, thus this section has now assumed sizable proportions and covers in brief form the constitution of several nonferrous alloys. Of the total of 934 pages, 618 pages are devoted to steel subjects and 218 pages to nonferrous subjects. The other 98 pages are utilized for the index, advertising and buyers' guide sections.

Thirty-two of the original articles in the *Handbook* amounting to 203 pages underwent partial or complete revision. The other original articles were reviewed, but were found up-to-date. To facilitate use of the volume, the index has been printed on blue paper and the buyers' guide and advertising section on buff.

◆

Reclaiming White Metals

Metallurgy of White Metal Scrap and Residues, by E. R. Thews; cloth, 383 pages, 6 x 9 inches; published by D. Van Nostrand Co., New York; and supplied by STEEL, for $5.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 27s 6d. postage extra.

Little available literature exists on the metallurgy of reclamation of scrap and residues, although this is becoming increasingly important in the metallurgical field. This volume is of value to those engaged in reclaiming the white metals, as the author supplies necessary information without going too deeply into details. Various types of white metals are treated in separate chapters.

◆

Structural Steel Explained by Its Institute

Facts and Figures About Structural Steel, second edition; published by American Institute of Steel Construction Inc., New York; 126 pages, 5¼ x 8 inches; paper.

In this volume, small enough for the pocket, has been assembled information bearing on structural steel and its industry.

After covering full information as to the purpose and history of the institute, its personnel, meetings and services, the book takes up statistics of steel, its advantages, distribution and construction values. A table is given of the comparative heights of buildings, notable buildings and bridges. Steel frame houses are discussed and the new battledeck floor explained. The later pages contain an exhaustive glossary of the industry, including the slang of the workers as well as engineering terms.

◆

Official Mineral Statistics

Mineral Resources of the United States, 1926; Part I, Metals, Part II, Nonmetals; cloth, 774 and 675 pages, respectively, 6 x 9½ inches; published by bureau of mines, department of commerce, Washington; and supplied by STEEL for $1.40 and $1.15, respectively, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 7s and 5s 9d, respectively, postage extra.

These volumes are collections of pamphlets published by the bureau of mines, giving statistics on various mineral resources. A large field is covered by special observers who collect statistics and present them as a guide to those interested.

Data include consumption, production, imports, exports and prices. Development work also is covered in many instances and world consumption is touched where it is pertinent.

Practical Ethics and Human Equation in Buying

True Values in Business and Buying, by C. G. Padel; cloth, 215 pages, 5 x 7½ inches; published by B. C. Forbes Publishing Co., New York; and supplied by STEEL for $2.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 12s 6d, postage extra.

Taking up the problem of profitable business and buying, the writer assumes high ground and subordinates expediency to true values. He has a practical design to which he applies facts to the end that a more practical and satisfying result is achieved.

He sees the present practice of purchasing as a branch of business which never has grown up. It lacks, to his view, guiding principles and rules of conduct. It has grown by expanding its muscles but has not developed its brain and follows many ideas which have been discarded long since in other spheres of activity.

For those outworn methods he suggests new ideas and procedures which, he argues, will build on a firmer foundation and result in great good to the buyer and the seller, thus fulfilling the inherent need of business, that each shall profit by a transaction. The third party to the transaction, the user, also is the gainer.

It is not a theoretical treatise, but intensely practical, pointing the way to actualities, on a high plane.

◆

Bearing Metals Covered

Bearing Metals and Bearings, by W. M. Corse; cloth, 384 pages, 6 x 9 inches; published by the Chemical Catalog Co. Inc., New York, and supplied by STEEL, $7, plus 15 cents postage; in Europe by the Penton Publishing Co. Ltd. Caxton House, London, 35s, postage extra.

This volume is another of the monograph series on scientific and technologic subjects arranged through the American Chemical society. It consists mainly of a bibliography of the literature on the subject of bearings and bearing metals from 1900 to 1928. The book is divided into four sections—history, bibliography, abstracts, and tables. The history deals with early developments, types of bearing metals, bearing types, design, troubles and failures, testing, lubrication, etc. The bibliography, 106 pages, is divided into bearing metals,

bearings and friction and lubrication. The abstract of papers contains short abstracts of the more important papers on the subject. Those who have had to check back on literature on any subject will appreciate the abstract section. The book concludes with 14 pages of tables giving the properties of bearing metals.

◆

Applying Mortality Laws to Inanimate Objects

Life Expectancy of Physical Property, by Edwin B. Kurtz; cloth, 205 pages, 5 ¾ x 8½ inches; published by the Ronald Press Co., New York, and supplied by STEEL, Cleveland, for $6, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 30s, postage extra.

Principles and methods used by life insurance actuaries in dealing with problems of human mortality have been applied in this book to the life problems of physical property, structures, machinery equipment and similar materials.

These principles apply better in some ways to physical property than to human life, since some important factors applying to the latter are absent in the case of non-living articles. The author crystallizes recent advanced thinking on problems of depreciation and obsolescence. He combines the engineering and accounting aspects of the problems. Fourteen years of research have gone into the making of this book and from this have been developed basic laws and principles governing the mortality of physical property. These give a scientific basis for dealing with problems of useful life and depreciation in connection with valuation and appraisal of public utilities and industrial establishments.

The user of equipment by this means can determine in advance the service life of any item under his own operating conditions. Data are presented in organized tabular form and many charts and diagrams serve to illustrate the text.

◆

Answers Welding Questions

Welding Encyclopedia, seventh edition, by L. B. Mackenzie and H. S. Card; imitation leather, 540 pages, 6 x 9 inches; published by Welding Engineer Publishing Co., Chicago, and supplied by STEEL for $5 plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25s, postage extra.

Definitions and discussions of words and terms used in welding literature occupy 200 pages of this book. Treatises on gas, arc, resistance and thermit welding follow, with instructions for welding all commercial metals by each process. Separate chapters are devoted to special welding, of pipe, tanks, boilers and structural steel. Cutting methods and training of operators are given special treatment. The present edition contains important additions to the previous text.

◆

Book of Mechanisms Is a Mine of Ideas

Ingenious Mechanisms for Designers and Inventors, edited by Franklin D. Jones; cloth, 536 pages, 6 x 9 inches; published by the Industrial Press, New York, and supplied by STEEL for $5, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 25s, postage extra.

This book is built on an earlier one entitled "Mechanisms and Mechanical Movements" and represents contributions of 110 experienced designers to the columns of *Machinery* over a period of many years. The best material of the earlier book has been retained, but the scope of the work has been broadened generally.

There are 20 chapters, each dealing with a specific class of mechanisms, such as; cams and their applications, intermittent motions, tripping or stop mechanisms, quick return motions, speed changing mechanisms, and magazine feeding attachments. Each chapter is freely illustrated with clear wax line cuts, and the well-written text is thoroughly tied in with the illustrations by means of easily located reference letters. Mechanical men will be pleased with the easy understandability of the material and its ready adaptability to every day design problems.

No book can take the place of trained mechanical brains and natural ingenuity. It is a fact, however, that this book can be a big help in making trained mechanical brains 100 per cent effective on problems to which they properly should be devoted. In other words, this book clearly sets forth time tried and ingenious ways in which numerous problems common to all machine design have been solved. The presentation of this collected information in permanent and readily available form absolves designers of the necessity of constantly "reinventing" details which have long before been perfected by others. This conserves their creative ability and valuable time for the new and unusual problems which arise in every improved design.

◆

Story of Great Lakes Is Tale of Human Drama

Freighters of Fortune, the Story of the Great Lakes, by Norman Beasley; cloth, 311 pages, 6 x 9 inches; published by Harper & Bros., New York; and furnished by STEEL, Cleveland, for $3.50 plus 15 cents postage; and in Europe by Penton Publishing Co. Ltd., Caxton House, London, for 18s, postage extra.

The story teller of ancient days was listened to, as is his modern successor, for at least two reasons; the substance of his tale and the manner of telling it. In both these respects this new book richly deserves the attention of those whose minds and hearts are stirred by achievement. In the bustle and hurry of modern life how little is appreciated the vast field of action which lay spread out before the first white men to visit the region of the Great Lakes of America.

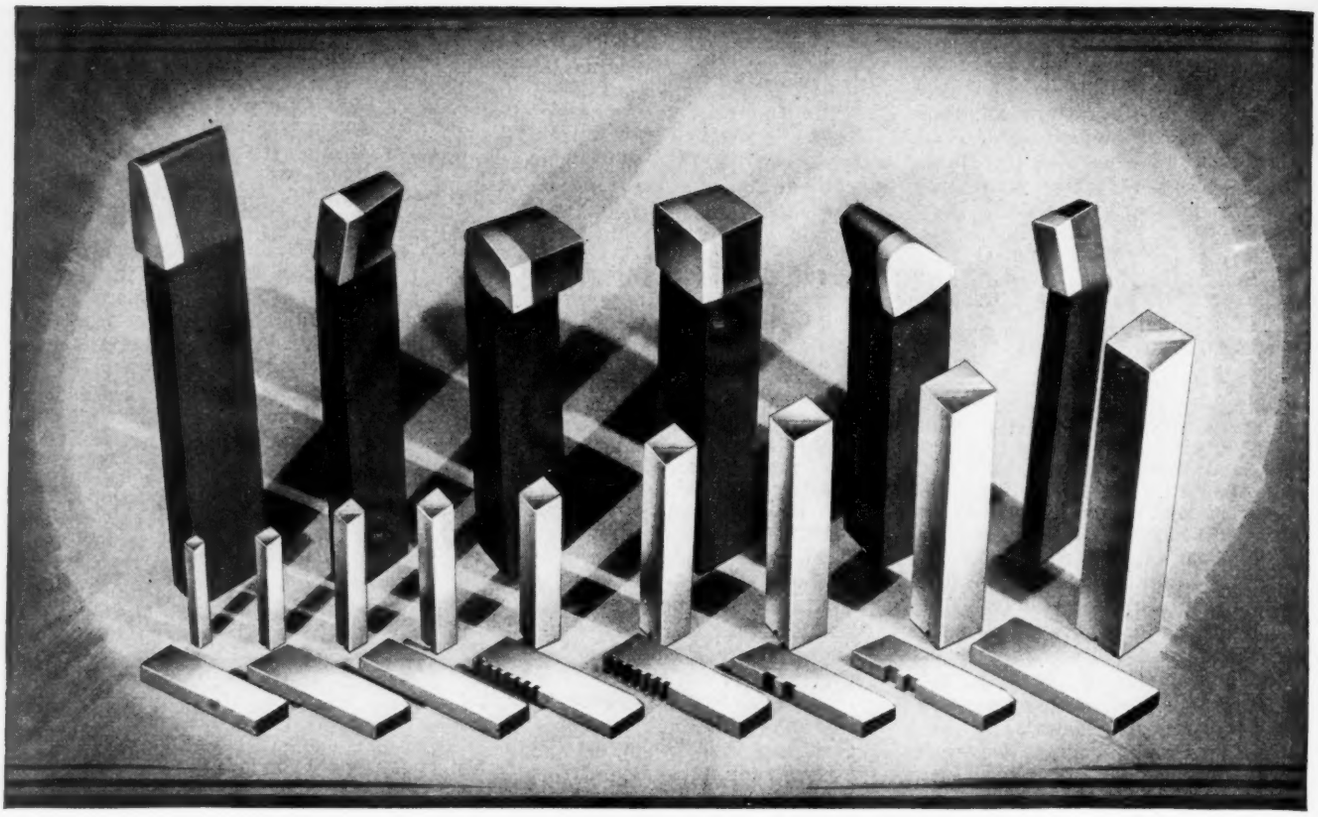
From its earliest times the development of water transport on these great inland waters is told in outstanding episodes from real events. Mr. Beasley's book has all the charm of an absorbing novel and the substance of a historical narrative. Beginning at the time of the first French explorations, the French Indian wars, the war of the Revolution and the war of 1812, he presents a quick moving picture of adventure of fighting and of the first attempts at crude commerce, all of which helped to lay the foundations for what is today one of the richest and most powerful sections of the world.

Headings Unfold Story

The chapter headings tell vividly the ground covered: A Cockleshell Sets Forth to Conquer the Lakes; A Treaty Brings Peace—and Commerce; A Great Fortune Begins in Furs; Steam Comes to Replace the Slapping Sails; Copper and Iron—and the Rush Is On. Later follow other chapters: Other Fortunes Begin To Grow: "I've Got Wheat Aboard, I Have;" "I Wouldn't Give a Cent for All the Iron In Minnesota;" Andrew Carnegie Loses a Decision; The Romance of the Schooner Is Over; the Only Durable Things Are the Intangible Ones; and then the last, the twenty-fifth chapter, is headed: They Have Come To These Lakes and They Have Not Looked Away. There are a number of excellent illustrations; some by the Canadian artist George A. Cuthbertson.

Most of the rugged, hard headed and lion-hearted men who have contributed in opening up this vast wilderness, from the early soldiers of France to the present day giants of industry, are made to live as real human beings in the pages of this stirring narrative.

This book will be equally appreciated in the sailor's cabin on a lake freighter and in the home of the captain of industry, for it is not only a collection of strikingly interesting historical facts, but it is also a moving tale of human drama in the pioneer days.



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Quality Products, Fair Prices, Dependable Supply, Engineering Service

Machine Tools and Shop Equipment

"Without machine tools modern machinery could not be built."

—Joseph W. Roe

Standard Gray Machinery Finish Is Gaining Wide Approval

THE gray finish established as a standard several months ago by the National Machine Tool Builders' Association is meeting with hearty approval, according to a bulletin issued recently by Ernest F. DuBrul, general manager of the association.

The first effective demonstration of the advantages of a standard finish was furnished by the National machine tool exhibition in Cleveland in the fall of 1929. It was a requirement that all equipment entered in that exhibition be finished in the standard color. The result exceeded expectations; instead of the polychromatic effect presented by previous exhibitions and by the ordinary industrial plant, the result in this case was one of harmony denoting industrial efficiency.

Builders and users of machine tools alike were deeply impressed, and wide adoption of the standard machine tool gray immediately followed the exhibition. This extended beyond the machine tool industry to cranes, hoists and other industrial equipment. In a number of large plants orders have been issued to the effect that in the future all equipment therein shall be painted this uniform color.

In addition to the improved appearance of industrial plants resulting from a standard color of equipment, other important advantages are to be found which "go below the surface," so to speak. For instance, the trouble involved in getting small batches of paint to meet the color specifications of different customers is avoided. Perhaps it is not generally known that expensive equipment frequently is delayed in shipment for considerable periods awaiting paint of a special color designated by the purchaser. In one instance, machinery costing $25,000 was held up for 60 days on account of a gallon of paint.

Then too, there is the matter of maintenance. Dirt of harmful character has greater visibility on the gray finish than on most of the other colors. This invites immediate removal by the maintenance men, which precludes the clogging of oil holes, penetration of grit into bearings, gumming of slides and clutches, and other common evils attending dirt accumulations. Dirty machinery also gives a slovenly appearance to a plant and invites poor work by the unfavorable reaction on the minds of workmen.

To further the cause of this carefully planned standard industrial color scheme, a folder entitled "Standard Machine Tool Gray in Your Shop" is being distributed from the headquarters of the National Machine Tool Builders' association, Cincinnati.

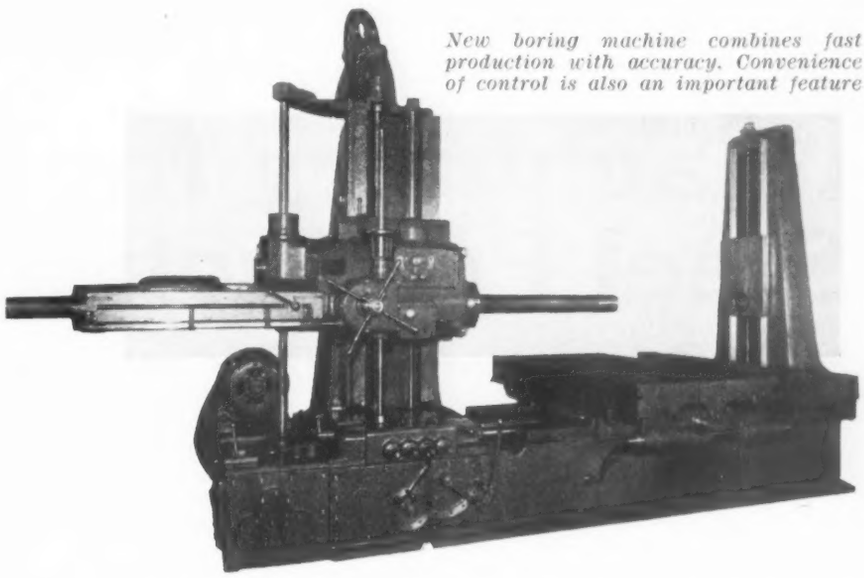
◆

Horizontal Boring Machine Designed for High Speed

Jones Machine Tool Works Inc., Philadelphia, announces a new high-speed horizontal boring and drilling machine, in which the spindle drive shafts and every other high-speed shaft, are equipped either with roller or ball bearings.

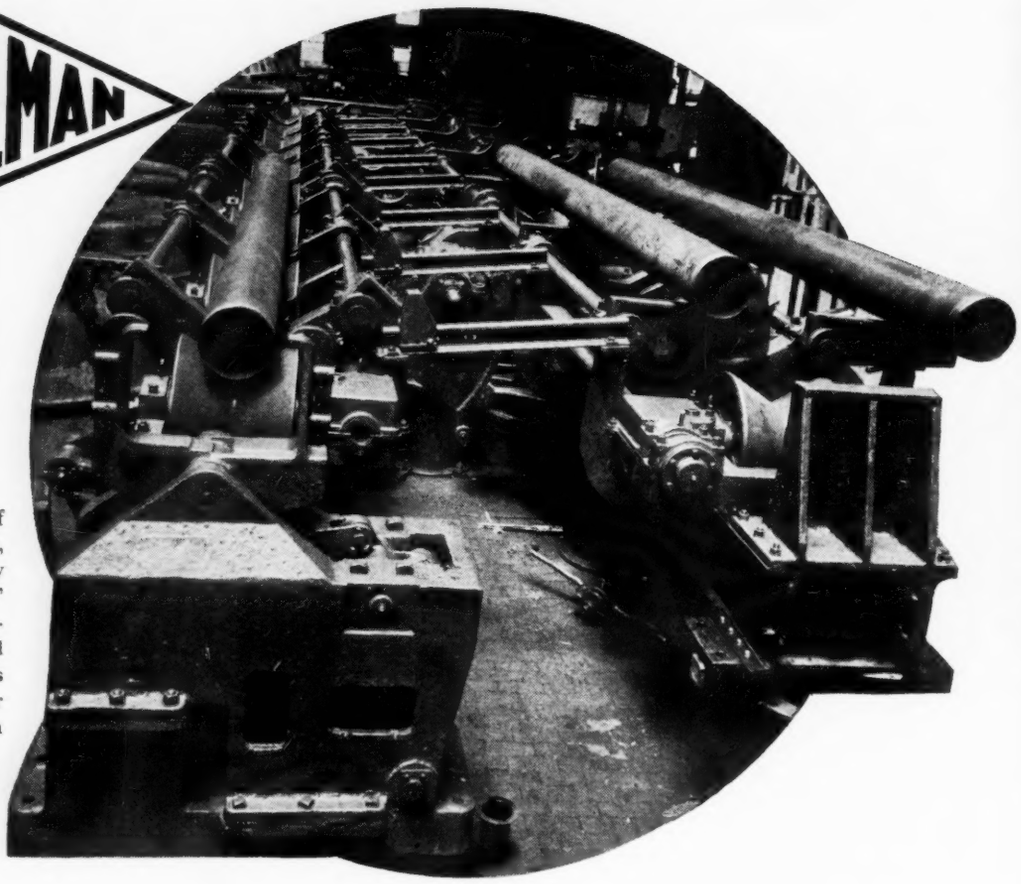
The new features of this machine are incorporated to the end of increasing accuracy, productive speed and versatility. The spindle is a stiff alloy steel forging ground over its entire length. Its sleeve, also a steel forging, is mounted on tapered roller bearings of exceptionally large diameter. Take-up adjustment on the sleeve is simple, which insures against radial or end play in this important element. The spindle saddle is of the long bearing type. Twenty-four changes of spindle speed and feed are provided by change gear boxes. All gears are of alloy steel, heat-treated. They are of stub tooth form, of coarse pitch and extra wide faces. The gear boxes are splash lubricated, other parts are lubricated by a centralized force system.

New boring machine combines fast production with accuracy. Convenience of control is also an important feature



The bed and the column are both of box section, being proportioned and ribbed to insure rigidity. The column is located by keys and dowels and fastened to the bed by bolts. This holds it firmly and accurately. The ways on the bed provide generous bearings for the saddle, which in turn is long to provide support for the table when in its extreme front and rear positions. Overhang

WELLMAN



Pair of Wellman Saw Tables, with independently operated "kick-on" and "kick-off" mechanisms on the second table. These tables will handle tubes or rounds at Wellman Cold Saws.

Machinery for Iron and Steel Production . . . . . .

Wellman Engineers have gained world-wide recognition for their unusual accomplishments in the design and construction of machinery for fast and economical production and handling operations. *Consult them on your problems!*

Wellman Products Include:

Steel and Tube Mill Equipment; Gas Producers, Flues, etc.; Gas Reversing Valves; Coal and Ore Handling Equipment; Car Dumpers (all types); Coke Oven Machinery; Special Cranes; Mining Machinery; Castings and Machine Work to Customers' Drawings.

from Ore Mine to Finished Product

THE WELLMAN ENGINEERING CO.

ENGINEERS CONSTRUCTORS MANUFACTURERS

CLEVELAND, OHIO

New York at 30 Church St., Birmingham at 1101 American Trust Bldg.
Chicago at Room 523-549 West Washington Blvd.
"Canadian Wellman-Seaver-Morgan Co. Limited," 307 Reford Bldg., Toronto—821 Castle Bldg., Montreal
Mexico City at Edificio Oliver, 16 De Septiembre No. 5.

Formerly THE WELLMAN-SEAVER-MORGAN CO.

of the spindle, saddles, slides, etc. is everywhere eliminated as far as possible.

The longitudinal feed and rapid traverse of the spindle, the vertical movement of the spindle saddle, the movement of the work saddle along the bed and of the work table across this saddle, all are controlled by a single lever at the front of the machine—this and all other control levers being arranged for the convenience of the operator. By means of a simple disk clutch mechanism all motions can be reversed instantly without stopping the machine. Actuating screws are of large diameter and are accurately cut so that their micrometer dials, graduated in thousandths of an inch, can be depended upon to give accurate readings.

A vertical milling attachment is built to fit this machine, and as provisions are made for it when the machine is built, it can be applied at any time without extra machining or fitting.

◆

Conveying Apparatus Has Many Applications

Clark Tructractor Co., Battle Creek, Mich., has designed a portable, flexible, power-driven elevating and tiering conveyor which has found many useful application in a wide range of industries. The conveyor, shown in the accompanying illustration, uses a new principle, two external spiral tubes are turned toward each other by power head. Anything placed on the conveyor travels forward rapidly, perfectly balanced.

A standard unit consists of six 8-foot dual sections and a power head. Each section is light, joins to the assembly with an automatic lock, is easily shifted about by one man, and the entire 50 feet of line can be assembled or disassembled in 6 minutes. Flexibility is secured by the ability of any joint to take a 15-degree angle horizontally or it may be tilted 15 degrees up or 10 degrees down. In the elevating operation, sections may be supported by the material that has already been stacked.

A hurdle section permits any number of 50-foot units to be hooked together forming a continuous line of any desired length. The traveling load hurdles each power head in the line. Right and left spiral chutes are provided for shunting the load from one conveyor line to another without manual handling, thus making right-angle turns simple.

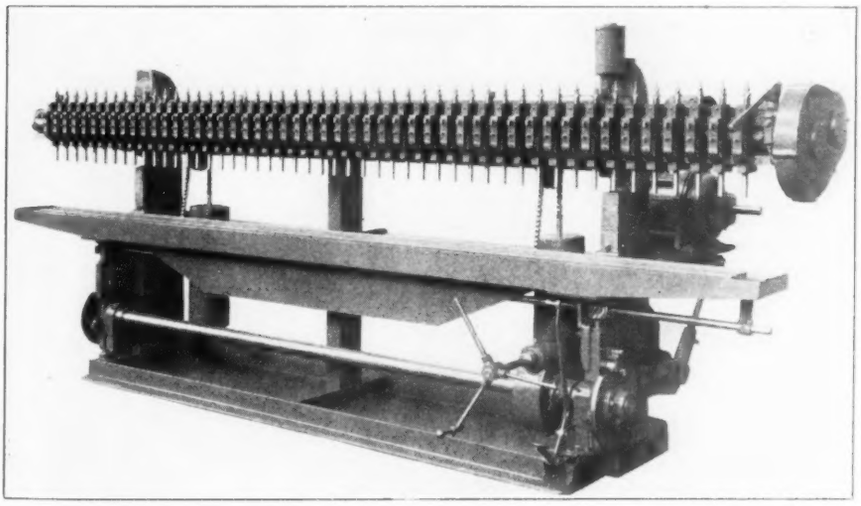
Jointed spiral tubes make this portable conveyor quickly adaptable to various transporting, elevating and tiering conditions

49-Spindle Drill Features Welded Steel Frame

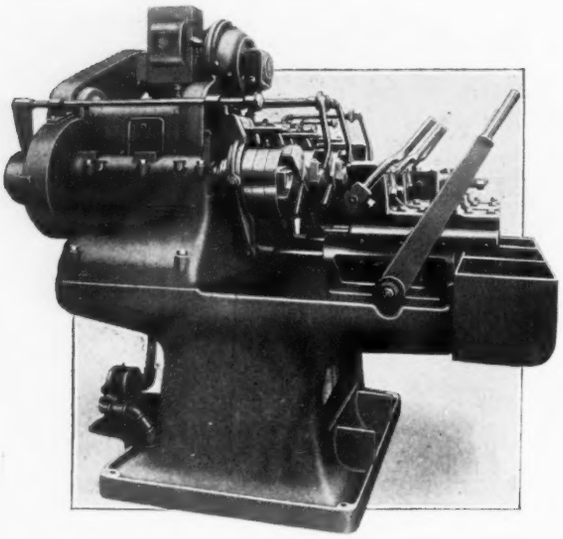
Moline Tool Co., Moline, Ill., recently has constructed a 49-spindle drilling machine, 14 feet in length, and assembled largely by welding. Minimum center distance between spindles is 1½ inches and the maximum between the end spindles is 14 feet. All principal members of the frame are of steel excepting the columns which are of cast iron. The base is a flat piece of boiler plate, with angle irons welded along the edges to give stiffness. Both ends are built up with small box section pads for the convenience of bolting columns. The table is an I-beam, the web furnishing the bottom of the water pan, and ends being closed with plates welded in place. Cross members welded in place furnish the pads for mounting the knee. Cast iron sections are bolted and welded in the center, providing the working face which is T-slotted. A rib is welded to the bottom of the entire unit, providing the required rigidity.

Welding Is Utilized

The rail on which the 49 spindle heads are mounted is constructed of an H-section welded to a large piece of boiler plate. Gray iron castings are fitted into the H-beam and bolted and welded in place, forming the necessary shape for mounting spindle units and giving continuous bearing for the main driving spiral. This unit is machined after all welding has been completed. The rail is tied to the base by an angle iron which gives added strength to the entire machine. Except for the steel construction as noted this is a standard cam feed machine, motor driven, with necessary pickoff gears for both



This 49-spindle drilling machine is assembled by bolting and welding cast elements to frame members of structural steel and boiler plate



Three-spindle factory bolt threader has constant-speed motor drive and a pick off gear box giving 15 standard spindle speeds

the drive and the feed. The unit is shown in an accompanying illustration.

Bolt Threader Is Designed For High Production

Landis Machine Co. Inc., Waynesboro, Pa., has introduced a new factory bolt threader with three spindles, pick off gear box, and constant-speed motor drive. By means of eight sets of interchangeable gears, 15 threading speeds ranging from 38 to 271 revolutions per minute are available with standard equipment. Other speeds can be obtained by the use of special gears.

All shafts of the gear box are made of alloy steel and are mounted on antifriction bearings. Bearings throughout the machine are lubricated by a pressure system. Work and chasers are flooded with coolant delivered by a low speed, low pressure, large volume pump which is belt driven from a constant speed shaft. The entire coolant system has been redesigned to insure larger volume of coolant at all cutting speeds.

The constant-speed motor is mounted on the top of the head of the machine and is direct connected to the gear box by means of a silent chain. The machine is built in 1-inch and 1½-inch capacities.

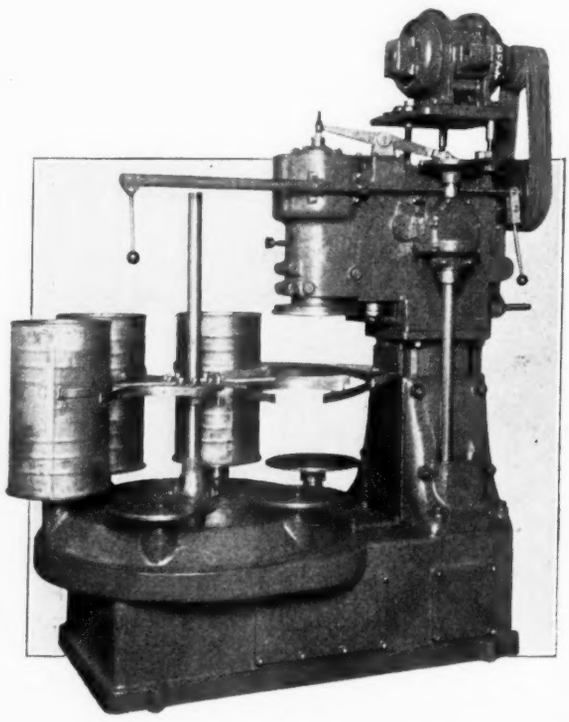
Less Power Required by New Double Seamer

E. W. Bliss Co., Brooklyn, N. Y., has developed a new semiautomatic double seaming machine for round drums, pails, tubs, and similar articles having diameters not in excess of 22½ inches and not over 18-gage in thickness. Power requirements have been reduced by the application of antifriction bearings and the splash system of lubrication. The machine, shown in the accompanying illustration, comprises a self-contained seaming head which is bolted to a column having a machined front face to which may be gibbed the footstock or workholding knee. The head is a single box casting and carries the work spindle, driving shaft and roll slides together with the automatic feed mechanism for the latter. All fast running shafts are mounted on ball or roller bearings while the work spindle, mounted in tapered roller bearings, is grease packed and fed from a cup. The cams and worm gear run in oil. The came operate a pair of steel feed levers at the back which are connected to the slides by long ball screws, making a convenient means of adjustment. Work on small diameter articles is facilitated by having the top faces and the upper parts of the side faces of the slides guided all the way out to the spindle.

The work spindle is mounted in a quill to permit the small vertical adjustment necessary to bring the chuck to the level of the seaming rolls. When set, the quill is clamped firmly by two bolts in the split quill housing. The spindle nose is flanged and has four tapped holes for securing the chuck. It also has a 2-inch chuck centering pilot which takes the roll pressure. At the right of the head is a vertical splined shaft for actuating the various workholding devices and a handle for tripping the feed clutch.

The output of this type of seamer depends primarily on the time required to complete the feed cycle. This time depends on the number of spindle turns which experience shows to be required for good work by the first seaming roll. The gage of metal and flange widths of the can determine this speed and accordingly a system of change gears has been provided which gives a range of 5 to 16 turns of the spindle for the first seaming roll and proportional differences in the time for the entire cycle.

Diversified production requirements have led to the development



Semi automatic double seamer handles 18-gage drums, pails, tubs, etc., up to 22½ inches in diameter by means of the turret principle

of three distinct types of feed for the machine, all three designs making use of the standard seaming head. The first type has a single-spindle footstock and is best adapted to limited production speeds. The second type of feed has a four-station dial feed and accommodates work up to 15¼ inches diameter and 26 inches high with a production of 12 to 16 per minute. The third type has a dial for the drums up to the full swing capacity of the machine. With a four-station dial it takes 22½-inch diameter work and with a six station dial up to 18-inch diameter. Height range is from 18 to 36 inches. The application of the dial or turret principal to sheet metal working is an important step in increasing production and the machine lends itself well to installation in connection with a conveyor line.

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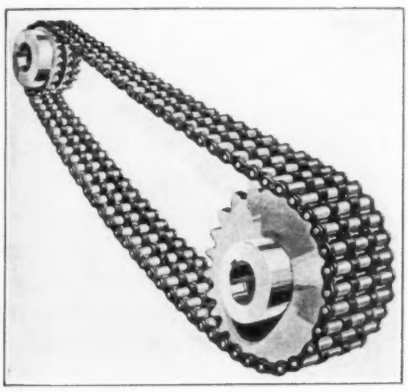
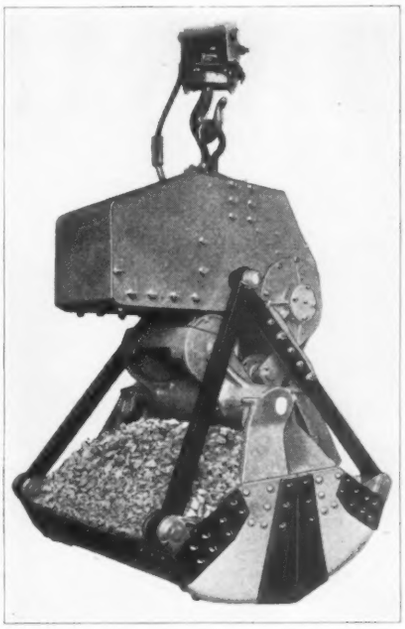
Power Drives Available in Stock Sizes

Diamond Chain & Mfg. Co., Indianapolis, is announcing its new stock chain for all standard power



Standard chain and sprocket drives simplify design problems

applications. The stock drive, shown in the accompanying illustration, consists of a roller chain and two sprockets, ready to be installed. They are carried in stock by distributors and supply houses in single to quadruple strands, from ¼ to 75 horsepower, in ratios up to 8.4 to 1 and for motor speeds up to 1750 revolutions per minute. The drives make the chain and sprockets more readily available where no special design problem is encountered. They supplement the regular line of high-speed drives of the company which handle up to 672 horsepower and speeds up to 3600 revolutions per minute.



Power arm type clamshell bucket gives smooth operation

Clamshell Bucket Works in Its Own Height

Erie Steel Construction Co., Erie, Pa., is announcing a motor-operated power-arm type clamshell bucket. The new equipment is smooth in action and does not throw sudden shock on the crane. It works within its own height and digs itself in, digging as much or as little as the operator wishes. The operator has complete control of the loaded bucket and he can empty the whole or any part of its load.

Danger Is Eliminated

The bucket, shown in the accompanying illustration, requires no trip ropes, making it impossible to become accidentally discharged. Danger to workmen is eliminated because it is impossible to spill the material or open the bucket until the current is applied. It is built entirely with steel with correctly shaped digging scoops heavily reinforced to stand hard continuous service, handling successfully coal, coke, broken open-hearth slag, sand, stone, cement, cinders and the like bulk material.

There are no readjustments necessary, no frictions, clutches, chains, springs or unnecessary parts. The wiring is simplified, although additional wires are required when used on cranes with lifting magnets. The bucket is manufactured in ¾-yard capacity and up, either alternating or direct current, for inside or outside work.

Coupling Provides Economy on Special Applications

Ajax Flexible Coupling Co., Westfield, N. Y., has developed a new coupling which is of the pin and rubber bushing type and is a modification of the standard couplings manufactured by the company. The new coupling, shown in the accompanying illustration, is in reality a coupling of limited size, designed for purposes of economy on special applications, such as centrifugal pumps, small speed reducers, fans, motor generator sets, and all jobs at motor speeds within the ore and load limitations of the device.

The coupling is made with aluminum alloy flanges, hardened and ground alloy steel drive studs and specially compounded rubber bushings firmly cemented to hard bronze bearings by a new process. Its weight is 2 pounds per coupling, size 4 inches outside diameter by 2 1/16 inches overall length avail-

Pin and rubber bushing coupling has aluminum alloy flanges

able at 7½ horsepower, 1750 revolutions per minute on steady loads, and 1½ inches maximum bore or special keyways. The coupling is noiseless, free from vibration, easy to assemble, sets up no backlash and provides free end float.

◆

Surface Grinder Embodies Hydraulic Table Feed

Gallmeyer & Livingston Co., Grand Rapids, Mich., has introduced a No. 2 size in its line of surface grinders with hydraulic feed for longitudinal movement of table and cross feed. The new size, shown in the accompanying illustration, is provided with

Thor CHIPPING HAMMERS

The Thor "Spool" Valve Hammer is especially designed for use where dirt and grit work into the hammer and must be eliminated without wear or tear on the moving parts.

Will Cut Your Chipping Costs

Thor Chippers are smooth-running, powerful and speedy. They have a simple and efficient valve mechanism and work with less vibration than ordinary hammers.

The barrel of every Thor Chipping Hammer is made of high grade alloy steel and the bore is hardened, ground and lapped. This special operation of lapping the bore to size removes all the high points left by grinding and saves that first rapid wear which takes place so quickly when the barrel is merely ground.

All we ask is that you try one Thor Chipper. Its performance will so thoroughly convince you of its superiority that you'll soon standardize on them throughout the shop.

Thor Chipping Hammers are made in two types—sleeve valve and spool valve. There is a size for every requirement.

Thor Rotary Drills and Grinders are the outstanding development in Pneumatic Tool design. They set a new standard of air tool performance and efficiency. Write for literature listing complete line.

INDEPENDENT PNEUMATIC TOOL CO.

New York ····· TOOLMAKERS SINCE 1893 ····· *London*

PNEUMATIC TOOLS ··· ELECTRIC Thor TOOLS ··· AIR COMPRESSORS

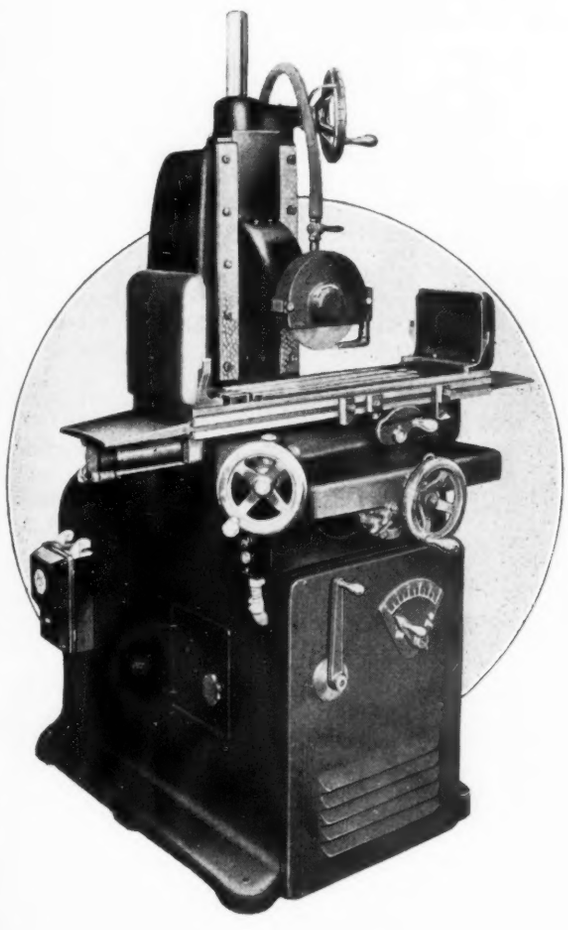
228 South Jefferson Street Chicago, Illinois

a table working surface of 6 by 18 inches. Movement of the control lever on the front of the base at the upper right hand corner will give a wide variation of longitudinal speeds up to 60 feet per minute. Cross feed can be varied from 0.01 to 0.125 and can be made to operate at either end of the stroke or at both ends as desired. Provision also is made for hand operation. Table movement is controlled by the crank handle at the left of the front of the base.

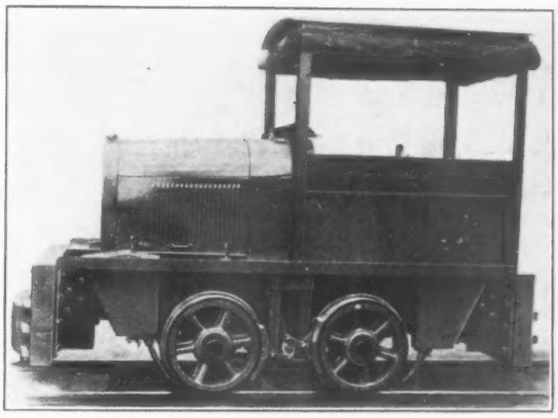
One Piece Frame

The base is a heavy casting made integral with the upright ways for the head, giving rigidity and permanence of alignment between the spindle bearings and the table. Motor, hydraulic pump and oil tank are housed in the base. Head ways are balanced carefully and protected from dust and dirt. The elevating screw is directly central between the ways, eliminating any cramping action sidewise, and the weight of the head to the rear of the ways plus the weight of the idler jack which is transmitted to the head by the down pull of the belt is almost the same as the weight of the head forward of the ways, thus eliminating any cramping action from front to back.

The illustration shows the machine arranged for wet grinding but with the front and rear table splash guards removed to show the working surface of the table. Standard size of wheel carried is 8-inch diameter by ½-inch face, but the spindle is sufficiently large and rigid so that variations from standard are feasible. The grinder has a capacity for grinding work 9½ inches thick under the standard 8-inch wheel. A cross feed of 6½ inches is provided so that a wheel ½-inch wide will clear the working surface of the table on both sides.



New surface grinder has hydraulic feed on longitudinal and cross movements of work table, with both hand and automatic control



Ford powered light locomotive gives strong traction and can be safely operated at 15 miles per hour on light uneven trackage

Line of Light Locomotives Have Ford Power Plants

Brookville Locomotive Co., Brookville, Pa., has placed on the market a new line of light four-wheel locomotives, powered by standard 40-horsepower Ford AA motors in conjunction with standard Ford heavy-duty four-speed truck transmissions. In the TA series, built in weights of 2, 2½, 3, 3½ and 4 tons, final drive is direct from the axles of a standard Ford truck worm drive differential assembly. A three-speed transmission can be furnished with these models.

In the BFA series, built in weights of 3, 3½ and 4 tons, final drive is direct to the lower axles from a reverse transmission which makes all four speeds of the Ford transmission available in reverse. Low mine types of any size of either model are optional, but cabs with lights, curtains, etc., are extra.

Transmission Is Simple

Transmission to the lower axles is by oversize roller chains on split sprockets which can be replaced without disassembling the running gear. The four wheels are all drivers. They are 20 inches in diameter, with 4-inch faces and 1⅛-inch flanges. The frame is of heavy gage structural steel. Axles are oversize and run in spring supported journals.

Wheels with renewable steel tires are supplied as standard equipment and are strongly recommended as giving 25 per cent greater traction than ordinary chilled cast-iron wheels. In high gear the locomotive will attain a speed of 15 miles per hour. This maximum speed can be attained even on light trackage without derailment, because of the

wide faces and deep flanges of the wheels and the cushioning action of the spring journal suspension.

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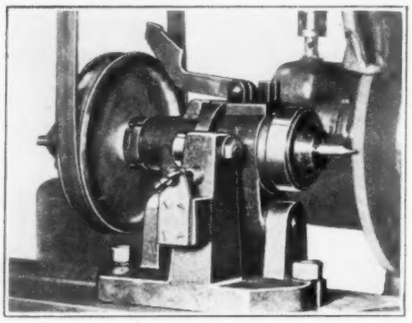
Deliberate Distortions Made in Design of New Hob

Barber-Colman Co., Rockford, Ill., has designed a new type of production hob in which several deliberate



Grinding attachment permits proper relieving of cutters

distortions are made to permit higher cutting speed and reduced power requirements. Investigation showed that the tips of the hob teeth were doing by far the greater share of the work of removing metal. It was evident that the tips of the teeth could be strengthened if they could be widened. This result was accomplished by assuming a pitch diameter for the gear to be cut that was smaller than the actual pitch diameter, and laying out the profile of the hob tooth on the basis of this assumed diameter. This made the pressure angle of the hob smaller than the pressure angle of the generated gear, gave wider tips to the hob teeth, and made them narrower at the base, without disturbing the outline of the generated gear teeth. Thus a deliberate distortion allows more metal at the point of greatest cutting effort.

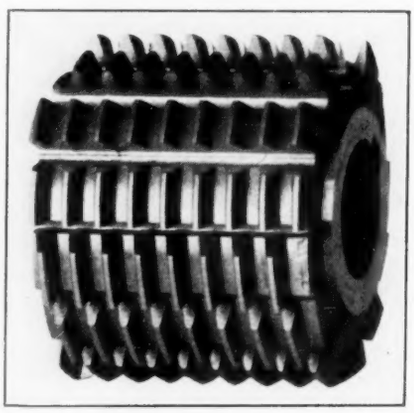
Unequal Side Clearance

Equal side clearances on the teeth of a hob often produce a dragging effect on the leaving side; consequently these clearances were made unequal on the new hob and thus the leading side has less clearance and the leaving side more, producing a more uniform cutting action. To increase the smoothness of cutting action still further straight gashes are used, producing teeth having faces at an angle with the line of the lead helix, thus giving a shearing effect on the leading edge and top of each tooth. Teeth are sharpened with a considerable hook instead of the customary radial face. These distortions have the same effect in a hob as a drop-off back of the cutting edge has on any metal cutting tool, producing a more effortless cutting. Lastly, since the outline of the hob tooth was disturbed by the hook and straight gashes it was necessary to make a compensating distortion in the tooth form. The new hob is shown in an accompanying illustration.

◆

Fixture Grinds Relief of Chamfering Cutters

City Machine & Tool Works, East Third at June streets, Dayton, O., has introduced a new grinding attachment for use in connection with the gear tooth chamfering machines which the company manufactures. Shown in the accompanying illustration, the device is a fixture which grinds the relief of the cutter. A cam arrangement is utilized so that the cutter being held in the collet moves back and forth in exact relationship to the grinding wheel to assure the proper relief. The original setup is made by placing the cutter loosely in the collet and bringing the arm over and setting it in the cutter flute before tightening the collet. Then, after tightening the collet, the cutter is revolved by an indexing arrangement which is synchronized correctly with the previously described in and out motion produced by the cam mechanism. The fixture is claimed to provide accuracy of grinding with a minimum amount of metal removed, increasing the life and performance of the cutters. The attachment can be applied to standard grinding machines.



Production hob gives more speed with power economy

Flexible Lighting Cable for Outdoor Use

Sullivan Machinery Co., 400 North Michigan avenue, Chicago, announces a new safety lighting cable for underground and outdoor illumination. The new cable, shown in an accompanying illustration, has been developed to withstand the severe demands of underground

Safety lighting cable is designed for factory yards

lighting service—for station, main level, sublevel, stope, tunnel, raise and trestle lighting. The cable is also adaptable for use in quarries, open pits and other surface workings, in industrial and power plant yards and on construction jobs. Safety and utility of a permanent installation with the wiring simplicity and economy of a temporary job are said to be combined advantages. In addition, installation, extension or removal may be accomplished quickly on the job; the cable may be hung over any projecting object such as a nail, timber or bracket; no insulators or special supports are required; there are no taped joints; 100 per cent salvage value is obtained upon removal; length may be extended to any required distance from the current source; and standard lamp guards may be used.

The cable consists of a molded rubber stranded two-conductor cable, into which molded rubber covered porcelain lamp sockets are vulcanized at 33 1/3-foot intervals. Cable and connectors are tested at 1500 volts and molded rubber blank screw plugs are used to seal light sockets that are not in use.

"Distribution of automobiles in the Middle West continued to diminish in June and larger declines from a year ago were shown than the preceding month," according to the monthly review of the Chicago federal reserve bank.

Steel Outlook Is Less Favorable

Sentiment Weakens Before Tardy Auto Comeback, Sharp Cut in Pig Iron Output, Drought Damage to Crops—Good Shape Inquiry Out—Prices Unsteady

FAILURE of steel specifications to respond immediately to the resumption of automobile production, fresh alarm over the damage being done to crops and agricultural buying power by the drought, and the most drastic curtailment of pig iron production in recent years have vitiated much of the hope entertained for an improved iron and steel situation in the early fall.

The opinion still is widely held that July may prove the low month of the present dip, and in the next week or ten days heavier demand is certain to emanate from the automobile industry, as its inventories of raw material are nil. But whether this betterment will be more than a seasonal fluctuation many doubt.

Steelmaking operations continue at 55 to 60 per cent of capacity, with no definite trend. Steel corporation subsidiaries, at 64 per cent, are up 1 point. There are, of course, substantial market factors, such as satisfactory structural awards and inquiries, prospective ship work in the East and capacity operations at line pipe mills. In the scrap trade dealers are avoiding a short position. Nevertheless, sentiment for the next 60 days appears slightly dimmer this week.

Crop damage may assume serious proportions. Directly it threatens to contract the market for wire products and tin plate. Indirectly, it offers possibilities of retarding a comeback in the automobile market. Farm implement manufacturers are gloomy over fall and winter business.

Restriction of pig iron output may be regarded as a constructive measure and an indication that the market situation has been liquidated, but it does afford an accurate gage of actual consumption. July's daily rate of 81,574 gross tons was 16 per cent below that of June and the lowest rate since October, 1924. At the end of July only 144 blast furnaces were active, the least since August, 1922. For seven months of 1930 production totals 20,833,398 gross tons, compared with 25,420,048 tons in 1929 and 21,583,174 tons in 1928.

Pending structural work includes 35,000 tons for highway bridges in Kentucky, 12,000 tons for a bridge at Cleveland and 5000 tons for a school at Chicago. Ford Motor Co. has bought 3500 tons for a factory at Richmond, Calif., and will place a like tonnage for a plant at Buffalo. This week's structural awards, at 28,000 tons, compare with 38,982 tons last week.

Freight car awards in July, totaling 1348, bettered the 998 ordered in June. If the Illinois Central distributes its 2300-car inquiry this month, August will show further improvement. Seven-month car orders for 1930 are 33,952, for 1929, 63,157; for 1928, 28,916. Further rail buying may develop, the Great Northern inquiring for 9000 tons, Wheeling & Lake Erie 1400 tons and large eastern roads being prospective purchasers.

Excepting structurals, plates are the most active finished steel line. New York is placing 9000 tons, and Detroit 2000 tons, oil tank inquiry at Chicago totals 10,000 tons, and the Milwaukee pipe fabricator has requirements for 150,000 to 175,000. Bars, like sheets, strip and alloy steel, await releases from automotive consumers. For pig iron, coke and scrap, demand continues mediocre, with the probability that August shipments will exceed those for July.

Prices appear less steady this week. Galvanized and black sheets are off $2 per ton at Chicago. Large rivets have been cut $3 per ton at Cleveland. Cold-rolled strip is being shaded $1 to $2 per ton. While producers are attempting to hold bars, plates and shapes on the basis of 1.65c, Pittsburgh, there is an element of weakness. Some lake furnaces have dropped below $17 for pig iron in strongly competitive territory.

A reduction in pig iron at Philadelphia lowers the market composite of STEEL 1 cent this week, to $33.08, which compares with an average of $33.21 for July, $36.54 last August.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

This week (Aug. 6, 1930)	**$33.08**
Last week (July 30, 1930)	**33.09**
One month ago (July, 1930)	**33.21**
Three months ago (May, 1930)	**33.73**
One year ago (Aug. 1929)	**36.54**
Ten years ago (Aug. 1920)	**68.87**

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Aug. 6, 1930	July, 1930	May, 1930	Aug., 1929
PIG IRON				
Bessemer, del, Pittsburgh	$20.26	20.46	20.76	20.76
Basic, valley	18.00	18.20	18.50	18.50
Basic, eastern del. eastern Pa.	18.25	18.00	18.75	19.85
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	17.50	17.90	19.00	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.00
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Phila.	19.76	20.26	20.26	22.26
Malleable, valley	18.50	18.70	19.00	19.00
Malleable, Chicago	17.50	17.90	19.00	20.00
Lake Superior, charcoal, del. Chi.	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	18.63	18.83	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79
*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.				
COKE				
Connellsville furnace, ovens	2.50	2.50	2.55	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	31.00	31.00	32.20	35.00
*Sheet, bars, open-hearts, Pitts.	31.00	31.00	32.20	35.00
Billets, open-hearth, Pittsburgh	31.00	31.00	32.20	35.00
Wire rods, Pittsburgh	36.00	36.00	36.40	42.00

	Aug. 6, 1930	July, 1930	May, 1930	Aug., 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.65	1.70	1.75	1.95
Steel bars, Chicago	1.75	1.80	1.85	2.05
Steel bars, Philadelphia	1.94	1.94	2.04	2.27
Iron bars, Chicago	1.90	1.90	1.90	2.05
Shapes, Pittsburgh	1.65	1.65	1.75	1.95
Shapes, Philadelphia	1.66½	1.67	1.77	2.06
Shapes, Chicago	1.75	1.75	1.85	2.05
Tank plates, Pittsburgh	1.65	1.65	1.75	1.95
Tank plates, Philadelphia	1.80½	1.86	1.91	2.15
Tank plates, Chicago	1.75	1.75	1.85	2.05
Sheets, blue anl., No. 13, Pitts.	2.15	2.15	2.15	2.20
Sheets, black, No. 24, Pitts.	2.55	2.55	2.55	2.85
Sheets, gal., No. 24, Pittsburgh	3.15	3.15	3.25	3.55
Sheets, black, No. 24, Chicago	2.60	2.70	2.70	3.10
Sheets, blue anl., No. 13, Chicago	2.30	2.30	2.35	2.50
Sheets, galvanized, No. 24, Chi.	3.25	3.35	3.35	3.80
Plain wire, Pittsburgh	2.30	2.30	2.35	2.50
Wire nails, Pittsburgh	2.10	2.10	2.15	2.60
Tin plate, per base box, Pitts.	5.25	5.25	5.25	5.35
SCRAP				
Heavy melting steel, Pittsburgh	14.75	14.90	15.40	18.90
Heavy melting steel, eastern Pa.	12.50	12.50	13.38	16.75
Heavy melting steel, Chicago	12.00	12.00	12.55	15.05
No. 1 wrought, eastern Pa.	14.25	14.25	15.38	16.25
No. 1 wrought, Chicago	11.25	11.25	12.70	15.40
Rails for rolling, Chicago	14.50	14.50	14.85	17.75

Sheets

Heavier Automotive Demands Still in Anticipated Stage—Chicago Prices Are Lower

SHEET PRICES, PAGE 95

Pittsburgh—Sheetmakers have received some small orders from automotive users for immediate delivery, to complete cars in progress before the announcement of new models. The latter have not progressed sufficiently to allow makers of parts to begin production and orders from these sources are delayed. No buying of a character to test prices has been done and quotations are unchanged from previous levels. Black sheets are 2.45c to 2.55c, Pittsburgh; blue annealed, 1.95c to 2.15c; and galvanized, 3.10c to 3.20c.

New York — Sheet buying is showing slight improvement, although prices are easier. Blue annealed plates now are 1.95c to 2.00c, Pittsburgh, and blue annealed sheets, 2.10c to 2.15c. Galvanized sheets are 3.10c, Pittsburgh, to jobbers and 3.15c to consumers. Black sheets are 2.45c to 2.50c, Pittsburgh, with the lower price to jobbers.

Youngstown, O.—Improvement in the volume of specifications for common grades of sheets continues, though insufficient to increase mill operations. Automobile builders' inventories are low, which insures further orders within a few days or a week. Common black sheets hold at 2.45c to 2.55c, Pittsburgh; galvanized, 3.20c; autobody, 3.60c; and blue annealed, 2.00c to 2.10c. Independent steel mill operations in this district this week are at 41 per cent, against 40 per cent last week.

Cleveland — Sheet specifications have improved. Furniture dealers are showing signs of increasing their demands. New automotive activity indicates larger tonnage will be required. Autobody and furniture sheets hold at 3.60c and 3.70c, Pittsburgh, respectively. Black sheets are 2.45c, although 2.40c is rumored on desirable orders.

Chicago—Continued pressure by buyers has resulted in lower quotations in black and galvanized sheets, and further weakness in the narrower sizes of blue annealed. Mill prices for black sheets now are 2.55c to 2.65c, base, a reduction of $2 a ton. No. 24 galvanized sheets are 3.20c to 3.30c, mills, also off $2. Blue annealed sheets above 36 and 40-inch widths are fairly steady, but narrow widths, due to strip sheet and hot rolled strip competition, are $2 to $4 a ton below former prices. Chicago delivered prices continue $1 a ton above mill quotations. Sheet mill operations average 50 per cent, against 60 per cent a week ago. One producer has its ten Milwaukee hot mills down entirely this week because of light tonnage and poor operating conditions. The drought in the Southwest is affecting outdoor roofing demand for galvanized corrugated sheets.

Philadelphia—Sheet demand is maintained at the improved rate noted last week. One mill booked enough tonnage in the week to operate at 92 per cent for the present. Galvanized sheets are slightly easier at 3.05c to 3.10c, base, Pittsburgh. Black continue 2.45c, subject to occasional concessions on finishes taking high extras. Blue annealed continued fairly firm at 2.00c and 2.15c, according to the gage.

Cincinnati—A leading sheet mill interest reports new business supports a production schedule of about 36 per cent. Another interest has stopped production this week for repairs and vacations, but will resume Monday.

St. Louis—Demand for galvanized sheets has improved considerably, especially from the South and Southwest. Otherwise the sheet market is quiet. Prices are unchanged.

Birmingham, Ala.—The sheet market is quiet. Production by the Tennessee Coal, Iron & Railroad Co., at Fairfield, Ala., is restricted to demand. Gulf States Steel Co.'s new sheet mills at Gadsden, Ala., will be completed about Aug. 15.

Trinity Valley Iron & Steel Co., Fort Worth, Tex., manufacturer of gray iron castings, has increased its capital to $100,000 for expansion.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

SHEET MILL BLACK, NO. 24

Pittsburgh base	2.45c to 2.55c
Detroit, delivered	2.76½c to 2.81½c
Philadelphia, delivered	2.74c
Gary, Indiana Harbor	2.55c to 2.65c
Chicago, delivered	2.60c to 2.70c
Birmingham, base	2.70c
St. Louis, del.	2.97c

TIN MILL BLACK, NO. 28

Pittsburgh, base	2.70c to 2.80c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.10c to 3.20c
Philadelphia, delivered	3.34c to 3.39c
Gary Indiana Harbor	3.20c to 3.30c
Chicago, delivered	3.25c to 3.35c
Birmingham base	3.30c
St. Louis, del.	3.62c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base*	1.95c to 2.15c
Chicago, district mills	2.25c
Chicago, delivered	2.30c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.44c
Birmingham	2.30c

*Minimum price is for cont. mill.

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base*	1.70c to 2.00c
Chicago, district mills	2.10c
Chicago, delivered	2.15c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.42c
Birmingham	2.15c

*Minimum price is for cont. mill.

AUTOMOBILE NO. 20

Pittsburgh, base	3.60c
Detroit, delivered	3.86½c

FURNITURE NO. 24

Pittsburgh	3.70c

Tin and Terne Plate

Prices per 100-pound box Pittsburgh

Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, 24, primes	3.55c to 3.65c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

Standard wire nails	$2.10-2.15 and 2.25
Cement coated nails	2.15 and 2.25
Galvanized nails	4.15 and 4.25

(Per pound)

Polished staples	2.60c and 2.70c
Galvanized staples	2.85c and 2.95c
Barbed wire, gal.	2.80c and 2.90c
Annealed fence wire	2.30c and 2.40c
Galvanized wire	2.75c and 2.85c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.75c to 2.90c
Structural, c.l., Chicago	3.00c
**7/16-inch and smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Steel Plates

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.80½c to 1.85½c
New York, del.	1.88c to 1.93c
Boston, del.	2.05c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.78½c to 1.88½c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.90c
Coatesville, Pa., base	1.75c
Pacific Coast, c.i.f.	2.15c to 2.25c
St. Louis, del.	2.12c
Detroit, del.	1.91½c to 1.96½c

Structural Shapes

Pittsburgh, base	1.65c to 1.70c
Philadelphia, del.	1.66½c to 1.76½c
New York, del.	1.75½c to 1.85½c
Boston, del.	1.88½c to 1.98½c
Chicago, base	1.75c to 1.80c
Cleveland, delivered	1.83½c to 1.88½c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.90c
Pacific Coast, c.i.f.	2.25c
Detroit, del.	1.91½c to 1.96½c

Bars

SOFT STEEL

Pittsburgh, base	1.65c to 1.75c
Chicago, base	1.75c to 1.85c
Birmingham, base	1.90c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleve. base, local mills	1.70c to 1.75c
Philadelphia, del.	1.94c to 1.99c
New York, delivered	1.98c to 2.08c
Boston, delivered	2.05c to 2.15c
Detroit, del.	1.91½c
Pittsburgh, cold finish	1.80c to 1.90c
Pittsburgh, forg. qual.	1.90c to 2.00c

RAIL, STEEL

Chicago Heights	1.65c
Eastern mills	1.65c to 1.70c

IRON

Chicago, base	1.90c
New York, delivered	1.98c to 2.03c
Philadelphia, delivered	1.94c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.90c to 2.00c
Stock lengths, mill	1.65c to 1.75c
Chi. billet, over 500 tons	1.85c
30 to 200 tons	2.00c
Under 30 tons	2.45c to 2.85c
Chi., rail steel, over 30 tons	1.50c
Under 30 tons	2.10c to 2.50c
Philadelphia, cut lengths	2.09c to 2.14c

Cold-Finished Steel

Bars, Pitts., Chi., Buff.	2.10c
Cleveland	2.00c to 2.10c
Do. delivered, Detroit	2.20c
Shafting (turned, polished) Pitts., Buffalo	2.10c
Do. (turn., ground) mill	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets 35c; plates 31c; bars 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	6.70 to 6.80 off

Alloys Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80-1.10 Cr.	0.45
2300	1.50	5100 Chr. spring.	0.20
2500	2.25	6100 Bars	1.20
3100	0.55	6100 Spring	0.95
3200	1.35	Chr., Ni., Van.	1.50
3300	3.80	Carbon Van.	0.95
3400	3.20	9250 (flats)	0.25
4100 .25-.40 Mo.	0.70	9250 (rds., sq.)	0.50
4600 .20-.30 Mo.			

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.75c to 1.80c
Hot strip 6 1/16 to 24-in., Pitts.	1.65c to 1.70c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6 1/16 to 24 in.	1.80c
Cooperage hoop, Pitts.	1.90c to 2.00c
Do. Chicago	2.00c to 2.10c
Cold rolled strip., Pitts., Cleve., 3 tons, over	2.45c
Worcester, 3 tons, over	2.60c to 2.70c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$24.00 to 28.00
Light rails, 25-45, mills	$34.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.80c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.80c
Spikes boat, barge, Pitts.	3.00c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do. standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930 lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ¾ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts ..... 60, 10 and 10 off

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off

Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

Cut Nails, Chain, Piling

Cut nails, c.l., mills	2.45c
Do, less carloads	2.55c
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Sheet piling, Pitts.	2.00c to 2.10c

Bars

Heavy Export Tractor Orders Brighten Market—Rail Steel Bars Down $2 at Chicago

BAR PRICES, PAGE 95

Chicago—Bar mills are expecting a reflection of the renewed automotive activity next week. Releases have helped schedules for this week and operations are close to 60 per cent. Foreign orders for three western tractor builders will result in the heaviest finished steel specifications from the tractor industry since early summer. International Harvester Co. is to start work soon on an order for 12,000 tractors for Russia. Domestic tractor and implement business still is uncertain. Deformed bar shipments still measure well with last year. One producer of bars and other finished products reports more inquiries. Soft steel bars hold at 1.75c to 1.85c, mills. Rail steel bars for manufacturing are down $2 to 1.65c, Chicago Heights.

New York—While sentiment in bars is more cheerful little improvement has developed in sales. Steel bars are holding at 1.65c to 1.75c, Pittsburgh, and common iron bars at 1.65c to 1.70c.

Philadelphia—Steel bar demand is holding up well and due to recent improvement is believed to be within 10 per cent of last year.

Pittsburgh—That July marked the low point of the present market is the belief of many producers of soft steel bars. Slightly better specifications have been received from a diversified line of users, largely independent of automotive suppliers. The price is unchanged at 1.65c, Pittsburgh, although considerable tonnage for third quarter delivery is on books at 1.70c.

Youngstown, O.—Some improvement in steel bar demand is noted here. Small orders are more numerous. The prevailing price is 1.65c, Pittsburgh.

Cleveland—With the resumption of automotive production hopes are raised that soft steel bar specifications will be heavier. As yet, the actual gain is slight. Slack farm implement production is reflected in nuts. Outside mills usually quote carbon bars at 1.65c, Pittsburgh, in territory competitive with Cleveland mills asking 1.70c, Cleveland, for outside delivery and 1.75c, Cleveland, for local shipments.

Pines Winterfront Co., Chicago, automotive equipment, will start production at once on a vertical type detachable metal winter front for Ford cars.

Manganese Ore Prices Lower; Sales Quiet

New York—Trading in manganese ore is practically at a standstill. Prices are easier. One cargo of Brazilian low phosphorus ore was sold recently at 26 cents per unit, not including duty, and 25 cents has been offered to consumers on Brazilian ore higher in phosphorus. Caucasian manganese ore, 52 to 55 per cent, is nominal at 27 to 28 cents.

Pipe Drawback Is Allowed

Washington—The treasury department has announced allowance of drawback on cast iron pipe, pipe fittings and casting manufactured by the United States Pipe & Foundry Co., Burlington, N. J., with the use of imported pig iron.

Plates

Pipe Work Continues Mainstay of Market—Tank Requirements Slower—Sentiment Improved

PLATE PRICES, PAGE 95

New York—Shading of the 1.75c, Coatesville, Pa., price is less noticeable. The $1 a ton concession is being confined largely to railroads and shipyards. Operations at eastern mills continue 50 to 60 per cent. Few outstanding tonnages are noted. The Magor Car Co., New York, is expected to close this week on 500 tons of plates for cars booked for the Delaware, Lackawanna & Western. The American Rolling Mill Co., Middletown, O., is reported to have booked 2000 tons of 54 and 66-inch steel pipe for Detroit. The Standard Oil Co. of New Jersey is figuring on 2400 tons for export. Eighty-five hundred to 9000 tons of steel pipe will be up shortly for the local department of water supply, gas and electricity.

Pittsburgh—Aside from heavy tonnages of steel plates for large diameter line pipe, there has been little demand. Sentiment is better as the summer progresses and platemakers look forward to a better tonnage by early fall. Prices are unchanged at 1.65c to 1.70c, Pittsburgh.

Cleveland—The 1.65c, Pittsburgh price on plates is firm. Rumors of a local 1.60c price heard recently have not been repeated. Orders are small but more diversified.

Chicago—Shipment of plates by water and rail to Milwaukee for welded pipe line fabrication apparently will proceed at the present high rate for 10 to 12 weeks. The Milwaukee fabricator at the beginning of the month had 150,000 to 175,000 tons of plates on order for pending projects. July pipe shipments of that producer were 60,000 to 65,000 tons. No new tank work has been closed, about 10,000 tons being on inquiry from the oil country. Plate prices remain 1.75c to 1.80c, Chicago.

Philadelphia—Plate demand continues slow, with eastern mills operating at 50 to 60 per cent. Prices are unchanged at 1.70c to 1.75c, base, Coatesville, although most mills are adhering to 1.75c. Prices are subject to occasional differentials for certain classes of work.

Contracts Placed

2000 tons, 54 and 66-inch steel pipe, Detroit, reported going to the American Rolling Mill Co., Middleton, O.

Contracts Pending

8500 to 9000 tons, steel pipe, department of water supply, gas and electricity, New York, specifications expected out shortly; there are two projects, one involving 7500 to 8000 tons and the other 1000 tons.

2400 tons, Standard Oil Co. of New Jersey, New York, for export.

2000 tons, 36 and 42-inch welded steel pipe, Los Angeles; Western Pipe & Steel Co. low.

500 tons, plant for St. Joseph Lead Co., Josephtown, Pa.; general contract to Leonard Construction Co., Chicago.

Shipbuilding More Active

Washington—United States ranks second to Great Britain in world merchant shipbuilding, having displaced Germany in the second quarter, states the transportation division, department of commerce. Gross tonnage under construction in the Unit-

ed States in the second quarter was 238,163, compared with 119,000 tons a year ago. As of July 1, Great Britain and Ireland had 1,454,000 gross tons under construction, United States 119,098, the rest of the world 1,265,000 tons.

Road Machinery Takes Little of Improvement Cost

Washington—Expenditures for machinery and equipment by highway departments of the 48 states in improving roads in 1929 totaled $18,056,509, according to the bureau of public roads. This was less than 2 per cent of the total outlay by the states, $910,485,291, for road work. The total mileage improved, 32,522, was an increase of 3270 over 1928. The federal appropriation for road building for the fiscal year 1930-31 is $1,750,000,000, or approximately $80 for every registered motor car.

Castings Decline Further

Eleven foundries of the Worcester, Mass., Foundry council produced 2,675,042 pounds of castings in June, showing a decline for the third consecutive month. Half-year totals are a third less in 1930 than in 1929:

1929	
June	4,199,102
Total (6 mos.)	27,574,744
July	4,192,693
August	4,869,912
September	3,946,064
October	4,456,646
November	4,108,685
December	2,819,796
Total, 1929	51,968,540
1930	
January	2,862,705
February	2,786,850
March	3,160,872
April	3,337,292
June	2,675,042
Total (6 mos.)	18,082,456

Is Awarded Metal Patent

Chicago—Walter A. Bates, president, Walter Bates Steel Corp., Gary, Ind., has been granted a patent on an invention for the construction of expanded-metal structure. It is claimed that one piece of steel will replace a score of welded or riveted parts. Rights have been assigned to the Bates corporation.

Merchants' Association of New York, Woolworth building, New York, has published a booklet, "Changes in Customs Administrative Provisions."

Railroads

Car Demand Slack—Rail Mills at Chicago Under 50 Per Cent Capacity

TRACK MATERIAL PRICES, PAGE 95

New York—Domestic freight car awards in July, according to full returns, involve 1348, compared with 998 in June and 1592 in May. The total for the first seven months is 33,952, against 63,157 in the corresponding period of last year. Comparisons follow:

	1930	1929	1928	1927
Jan.	5,072	13,196	4,160	14,710
Feb.	17,027	15,944	10,220	5,960
March	6,118	12,023	2,958	4,955
April	1,997	8,205	6,043	3,675
May	1,392	7,562	2,531	5,425
June	998	5,886	2,422	7,440
July	1348	341	582	2,295
Total 7 mos.	33,952	63,157	28,916	44,460
Aug.	.....	2,854	677	1,181
Sept.	.....	4,517	1,378	682
Oct.	.....	19,506	2,853	886
Nov.	.....	6,361	6,140	1,189
Dec.	.....	9,710	4,799	14,897
Total	.....	106,105	44,763	63,295

Current car demand is exceptionally slack, with both orders and inquiries negligible. Locomotive inquiry includes three engines for the Interstate Iron Co., subsidiary of the Jones & Laughlin Steel Corp.

Cleveland—Wheeling & Lake Erie railroad is inquiring for 1400 tons of 110-pound rails, supplementary to its 1930 buying.

Chicago—Western rail mills report a spurt in miscellaneous rail orders from several roads for minor track extensions, totaling 3000 tons during the week. Great Northern has a 9000-ton inquiry before the market. Track accessory orders total about 1500 tons. Rolling stock inquiries are light. It is indicated Illinois Central may place its 2300 freight and passenger cars about Aug. 15. Mills are receiving specifications on the small car orders let recently, including the 500 box cars for Minneapolis & St. Louis.

Birmingham, Ala.—Expectations are that August will see scattering orders for freight cars received for the Bessemer plant of the Pullman Car & Mfg. Corp. Some of the Illinois Central order at least should come here. The Seaboard Air Line order will be completed early in September.

Car Orders Placed

100 hoppers for Great Northern railroad, to Canton Car Co., Canton, O.

Locomotives Pending

Interstate Iron Co., subsidiary of the Jones & Laughlin Steel Corp., Pittsburgh, three locomotives.

Tin Plate Output Is Heavier; Sales Lacking

Tin Plate Prices, Page 95

Pittsburgh—Tin plate production is heavier this week, one interest advancing its schedule to 70 per cent of capacity while another which has been working alternate weeks is on full this week. No new business has been taken.

Youngstown, O.—While tin plate makers say current shipments exceed the July rate they are uneasy over the crop situation. No unfavorable reports, however, have come from the canmakers.

Structurals Face Big Job To Turn Tide in Steel

(*Concluded from Page* 25)

080,590 tons, giving a margin of 1,295,004 to be equalled in the last six months of 1930.

Subtracting July's total awards of 185,686 tons leaves 1,109,318 tons or 221,863 tons monthly for the remainder of the year. Since average monthly lettings for last half of 1929 were 180,098 tons, it becomes evident that bookings will have to be speeded up. Fabricators have a real job ahead of them.

In connection with prospects for the remainder of 1930, W. J. Austin, president, the Austin Co., Cleveland, international engineer and builder, says: "Improvement in building activities, usually a forerunner of general business recovery, is getting under way. Inquiries received and contracts placed indicate increasing building interest throughout the United States. Executives recognize that with low money rates and with building costs lower than at any time in several years, the present is the most favorable time to construct new or modernize old plants in preparation for business recovery."

A 9-hole golf course is being laid out by the Eaton-owned Republic Steel Corp., Youngstown, O., at its Thomas, Ala., blast furnace plant.

Structural Shapes

Several Large Tonnages to Be Closed This Week—3500-ton Ford Motor Co. Job Pends and 12,000-ton Lorain-Central Bridge Closing on Aug. 6.

STRUCTURAL SHAPE PRICES, PAGE 95

New York — Structural buying started off the new month quietly, although several sizeable jobs are active. A leading inquiry involves a 4000-ton office building. Bridge work is featured by the placing of 2000 tons by the Virginian railways. While the prices on plain material are steady, weakness still prevails in the fabricated material market.

Boston—Structural awards in the past week aggregated only little more than 350 tons. The only pending contract is for 200 tons for a bank building at Brookline, Mass. One project totaling 1500 tons is being figured privately, making one of the best jobs for some months and expected to be placed directly.

Worcester, Mass. — Awards of 1150 tons have recently been announced. They include a school in Albany, N. Y., a tunnel between the Ware river and the Wachussett reservoir, and a school here.

Pittsburgh—Somewhat increased activity in placing of structural steel projects is noted at Pittsburgh, a number of tonnages having been placed during the past week with various fabricators. Prices remain steady at 1.65c to 1.70c, Pittsburgh.

Buffalo — Ford Motor Co. will close this week for about 3500 tons of structural for its new Buffalo plant. Several other orders of fair size are reported and August placing of fabricated orders here will run considerably in excess of those of July, which were much below the seasonal average.

Cleveland—Jobs are slow in this district and aside from the Central-Lorain bridge, which will take close to 12,000 tons counting all shapes involved, contract for which will be let Aug. 6, there is little awarded and little in prospect. Shaker Heights high school award, involving 700 tons, was placed with Massillon Bridge Co. Two hundred tons in the Summit bridge, Akron, O., went to Berger Iron Works, same city. Several smaller projects are in prospect.

Chicago — Engineers, architects and structural fabricators are figuring on more work than in several months. This fact, rather than actual inquiries, creates a better tone. Illinois Central, Chicago & North Western, and Burlington railroads are among the carriers with building programs. Court litigation and the plan to merge with the Chicago Athletic association is holding up the 2000-ton building for the Chicago Yacht club. Plain material prices remain 1.75c to 1.80c, mills.

Birmingham, Ala.—Small tonnage contracts still are fairly numerous and call for active operation of fabricating shops. Steady shipment of various shapes is noted.

Contracts Placed

5500 tons, office, Broad and Bridge streets, New York, to McClintic-Marshall Co., Pittsburgh, through Stone & Webster Co., Boston.

5300 tons, Lane techincal high school, Chicago, to Reuter Bros., Chicago.

3800 tons, Ford Motor Co. plant, Richmond, Calif., to Herrick Iron Works, Oakland, Calif.

2000 tons, telephone building, Newark, N. J., to American Bridge Co., through White Construction Co., New York.

2000 tons, bridge for Virginian Railways, Deep Water, W. Va., to Virginia Bridge & Iron Works, Roanoke, Va.

1800 tons, plant addition, Bakelite Co., Bound Brook, N. J., to Levering & Garrigues Co., New York.

1800 tons, 16 story apartment, 422 East Eighty-sixth street, New York, to A. E. Norton Inc., New York

1500 tons, bridge work for Louisville & Nashville railroad at Cincinnati, to Bethlehem Steel Co., Bethlehem, Pa.

900 tons, addition for Fifth-Third-Union bank, Cincinnati, to American Bridge Co.

800 tons, apartment, East Forty-eighth street, New York, to Bethlehem Fabricators, Bethlehem, Pa.

800 tons, 19-story apartment, 115 West Eighty-sixth street, New York to Harris Structural Steel Co., New York.

725 tons, steel shed at state docks, Mobile, Ala., to Virginia Bridge & Iron Co., Birmingham, Ala.

700 tons, high school, Shaker Heights, O., to Massillon Bridge Co. General contract awarded to H. F. Jeurgens Co., Cleveland.

600 tons, highway bridgework, Michigan, to Massillon Bridge Co. ,Massillon, O.

600 tons, Albany academy, Albany, N. Y., to Eastern Bridge & Structural Co., Worcester, Mass.

535 tons, physics building, Ohio State university, Columbus, O., to Pittsburgh Bridge & Iron Co., Pittsburgh.

500 tons, Kress store, Pasadena, Calif., to McClintic-Marshall Co., Los Angeles.

500 tons, public school 98, New York, to unnamed fabricator.

400 tons, high school, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

350 tons, Roebling building, Trenton, N. J., to McClintic-Marshall Co., Pittsburgh.

350 tons, highway bridge, Cascade, Wash., to Minneapolis - Moline Power Implement Co., Minneapolis.

300 tons, subway work, Chicago, for Chicago & Northwestern railroad, to Worden-Allen Co., Chicago.

300 tons, power house, Southern Kraft Corp., Panama City, Fla., to Ingalls Iron Works, Birmingham, Ala.

300 tons, sheet piling, Fisher Body Co. plant, Seattle, to Jones & Laughlin Steel Corp.

250 tons, sewerage plant, Mamaroneck, N. Y., to Guibert Steel Co., Pittsburgh.

250 tons, New York state highway bridge, to American Bridge Co.

200 tons, bridge over Cuyahoga valley between Summit and Cuyahoga counties, to Berger Iron Co., Akron, O.

175 tons, Maryland state highway bridge, to American Bridge Co.

175 tons, Medical Arts building, Atlanta, Ga., to Ingalls Iron Works, Birmingham, Ala.

150 tons, Wachusett tunnel, West Boylston, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

150 tons, acid building, Merrimac Chemical Co., Everett, Mass., to New England Structural Co., Boston.

115 tons, structural material for the Texas Co., to be shipped to Amarillo, Tex., to Orange Car & Steel Co., Orange, Tex.

105 tons, intake building, state water system, Barre, Mass., to Eastern Bridge & Structural Steel Co., Worcester, Mass.

102 tons, outlet building, state water system, West Boylston, Mass., to Eastern Bridge & Structural Co., Worcester, Mass.

100 tons or more, church, Little Flower parish, San Antonio, Tex., to Houston Structural Steel Co., Houston, Tex.

100 tons or more, junior college and senior high school, to La Salle Iron Works, St. Louis.

100 tons, building, Frankford, Philadelphia, to R. B. Lederle Co.

100 tons, Container Corp. building, Philadelphia, to McClintic-Marshall Co., Pittsburgh.

100 tons, filtration and clay storage buildings at Paulsboro, N. J., for Max B. Miller & Co., New York, to Austin Co., Cleveland.

Awards Compared

	Tons
Awards this week	**34,432**
Awards last week	**38,982**
Awards two weeks ago	**39,322**
Awards this week in 1929	**41,444**
Av. weekly awards, 1930	**35,038**
Av. weekly awards, 1929	**41,591**
Av. weekly awards, July	**37,137**
Tot. awards to date, 1929	**1,330,895**
Tot. awards to date, 1930	**1,121,206**

Contracts Pending

35,000 tons, 11 bridges for Kentucky; bids within 30 to 60 days.

15,000 tons, estimated, for 20-story Professional Arts building, Stuart street, and 40-story New England building, both in Boston. Buildings to

be erected for the W. J. McDonald interests; general contract for both units let to H. K. Ferguson Co., Cleveland. Bids received in about four weeks.

11,700 tons, Central-Lorain viaduct, Cleveland; bids Aug. 6.

4000 tons, 35-story office building, Third avenue and Forty-fourth street, New York.

3500 tons, for Ford Motor Co at Buffalo plant, to be awarded this week.

3500 tons, extension, Market street subway, Philadelphia. Bids open Sept. 5.

2000 tons, loft building, West street, New York.

2000 tons, medical school, Yale university, New Haven, Conn.

2000 tons, First National Bank & Trust Co. building, Oklahoma City, Okla.

1500 tons, coal breaker, for Philadelphia & Reading Coal and Iron Co. at St. Nicholas, Pa. Stone & Webster, Boston, contractors.

1000 tons, Juilliard school of music, New York.

1000 tons, dormitory, Yale university, New Haven, Conn.

900 tons, state highway bridge, Lehigh Gap, Pa.

900 tons, foundation work, warehouse, New York Central railroad, West End avenue between Sixty-second and Sixty-fourth streets. 10,000 tons will be required in all for the project.

845 tons, interstate bridge between Houlton, Wis., and Stillwater, Minn., general contract awarded to Peppard & Fulton Co., Minneapolis. Steel to be sublet.

700 tons, track elevation for Chicago & North Western railroad, in Chicago.

600 tons, printing plant building for Chicago Daily News Inc., Chicago.

600 tons, 2-story garage, 203 West 101st street, New York. Bids in.

500 tons, approximately, Cleveland clinic. General contract to Crowell & Little Construction Co., Cleveland. No date set for subcontracts. Plans preliminary.

500 tons, Hill school, Pottstown, Pa.

500 tons, Warner Bros. theatre, Akron, O.

500 tons, bridge reinforcement for Chicago, Burlington & Quincy railroad.

400 tons, newspaper plant, Chester, Pa., for Chester *Times*.

400 tons, Pier No. 1, San Francisco; bids Aug. 6.

350 tons, Youngling garage, Pottsville, Pa.

300 tons, court house, Pottsville, Pa.

300 tons, building, Van Wert, O., for Central Manufacturers' Life Insurance Co. General contract let to Baker Shindler Co., Columbus, O.

300 tons, 15-story apartment, 891 Park avenue. Arthur Paul Hess, architect.

250 tons, building for National Guard Administration, Philadelphia.

250 tons, stamping plant addition, Ohio Rubber Co., Willoughby, O., general contract let to H. K. Ferguson Co., Cleveland. Structural steel bid to be awarded within few days.

200 tons, Bell Telephone Co. building, Philadelphia.

200 tons, bank building, Barre, Mass.

200 tons, North high school addition, Akron, O.; bids to close Aug. 7 or 8.

Unstated tonnage, Muirs department store, East Orange, N. J. Starrett and Van Bleck, 339 Seventh avenue, New York are architects.

Unstated tonnage, Home for Aged Women, Cleveland. General contract to Crowell & Little Construction Co., Cleveland. No date set for subcontracts. Plans preliminary.

Concrete Bars

Small Lots Figure in Week's Awards — 1000-ton Job Pending at Buffalo—Other Projects Being Figured, but Buyers Are Slow to Close—1500 Tons Placed at Chicago

REINFORCING BAR PRICES, PAGE 95

Chicago—Besides a number of small awards, about 900 tons additional of Illinois road work has been let. Also outstanding among current projects is 900 tons for the power plant addition of the State Line Generating Co., Hammond, Ind. Pending projects include 400 tons, addition to grain elevator for Chicago, Burlington & Quincy railroad, at Council Bluffs, Iowa, general contract awarded. Published prices for billet reinforcing bars remain at 1.85c for lots of over 200 tons; 2.00c for orders of 30 to 200 tons; 2.45c for orders of 5 to 30 tons; and 2.85c for lots under 5 tons. Rail steel bars for road, bridge and culvert work are 1.65c to 1.75c.

New York—A moderately good tonnage of reinforcing bars has been sold at slightly firmer prices. Warehouses are selling at 2.40c to 2.50c with lots under five tons at higher figures.

Pittsburgh—Small demand for concrete reinforcing bars is being experienced here and the slump noticeable last week continues. Some projects requiring from 100 to 200 tons are being figured but buyers are slow to close for their material.

Buffalo—Upward of 1000 tons of reinforcing steel will be purchased shortly for additions to the grain elevators of International Milling Co. Other projects pending for which exact tonnages are not available are a $270,000 concrete reservoir in Syracuse, N. Y., for which I. M. Ludington, Rochester, N. Y., is low bidder and a $150,000 disposal plant at Depew, N. Y., on which bids will be taken soon.

Cleveland—Dullness prevails and aside from 25 and 50-ton orders not much of consequence in being placed. Three hundred tons are reported let to Bourne Fuller Co., here, division of Republic Steel Corp., Youngstown, O., though the Brecksville, O., station road bridge is said to be unplaced.

Birmingham, Ala.—Producers of reinforcing bars will be kept busy on present orders and those in sight for at least two to three months. Several road projects in Alabama will provide tonnage this month.

Awards Compared

	Tons
Awards this week	**6,197**
Awards last week	**6,192**
Awards two weeks ago	**9,873**
Awards this week in 1929	**2,364**
Average weekly awards, 1929	**6,257**
Av. weekly awards, 1930	**6,956**
Average weekly awards, July	**6,146**
Total awards to date, 1929	**200,234**
Total awards to date, 1930	**221,601**

Contracts Placed

1500 tons ,plant building, for A. E Staley Mfg. Co., Decatur, Ill., to Calumet Steel Co., Chicago.

900 tons, power plant addition, Hammond, Ind., for State Line Generating Co., to Kalman Steel Co., Chicago.

900 tons, Illinois road work, to Calumet Steel Co., Chicago.

400 tons, building, Montgomery-Ward Co., Jamaica, Long Island, to Concrete Steel Co., Chicago.

400 tons, Ford Motor Co., assembly plant, Buffalo; to unstated interest. Fred L. Ley & Co., general contractor.

300 tons, plant addition, Bakelite Co., Bound Brook, N. J., to Truscon Steel Co., Youngstown, O.

300 tons, post office, Brooklyn, N. Y., to Truscon Steel Co., Youngstown, O.

300 tons, high school addition, Shaker Heights, O., to Bourne-Fuller division, Republic Steel Corp.

250 tons, sewerage work, Mamaroneck, N. Y., to Joseph T. Ryerson & Son Inc., Jersey City, N. J.

215 tons, water system, Calgary, to unstated company.

200 tons, Wabash avenue bridge approaches, Chicago, to Olney J. Dean Co., Chicago.

182 tons, bridge over Shasta river, California, to unstated company.

150 tons, warehouse, Philadelphia, for Pennsylvania railroad, to Taylor Davis Co. through Turner Construction Co.

100 tons, state highway contract, Washington, and miscellaneous jobs, to Northwest Steel Rolling Mills, Seattle.

100 tons, building, Paulsboro, N. J., for Vacuum Oil Co., to Concrete Steel Co., New York.

Contracts Pending

1000 tons, additions to elevators, International Milling Co., Buffalo.

1000 tons, New York approach, Fort Lee bridge over the Hudson river. Port authority taking bids.

900 tons, state road work, Bergen coun-

(*Concluded on Page* 103)

Strip

Optimism Current Among Producers Without Immediate Basis—August Should Improve

STRIP PRICES, PAGE 95

Pittsburgh—July brought a better total of strip orders than June, and specifications last week showed a gain over preceding periods. Much of this came from manufacturers of cash registers, adding machines and similar devices who have completed their vacation periods and are resuming production. A peculiarity in the experience of some makers has been that specifications for cold-rolled strip have been greater than for hot-rolled, and production of the former has been stepped up considerably. Prices continue 1.65c to 1.70c for wide and 1.75c to 1.80c, Pittsburgh, for narrow hot-rolled, and 2.45c for cold-rolled.

New York—While hot strip prices are unchanged, cold-rolled strip quotations are now holding 2.40c to 2.45c, Pittsburgh, with isolated shading of $1 a ton. Demand for all products remains slack. Hot strip is 1.65c to 1.70c, Pittsburgh, on the wide, and 1.75c to 1.80c on the narrow. There is shading in these latter descriptions but not as yet sufficiently to warrant a reduction in the market spreads.

Philadelphia—Strip steel is in better demand. Hot strip continues at 1.65c and 1.75c, Pittsburgh, according to width and cold strip remains at 2.45c, Pittsburgh. Stripsheet prices are 1.80c and 1.95c, Pittsburgh, depending on gage and subject to occasional concessions.

Cleveland—Cold rolled strip demand shows signs of an upward turn, judging from the past week's orders. The feeling is that August cannot be as low as July in demands from automotive circles. Optimistic opinions prevail on the latter statement and look for an upward progression over the next thirty days. The 2.45c price is the same this week, but concession to 2.35c is heard for large orders. Hot strip demand shows little change and prices are at 1.65c on wide, with 1.60c occasionally though not often heard, and narrow at 1.75c.

Semifinished Still Reflects Slow Operations

Semifinished Prices, Page 106

Pittsburgh—Small demand for finished steel products is reflected back to makers of semifinished steel, who are receiving nothing but small orders for immediate shipments. The market is untested but no change has been made in prices, billets, sheet bars and slabs remaining at $31, Pittsburgh, and forging billets and wire rods at $36.

Philadelphia—Several moderate sales of billets were booked in the past week. Rerollers continue $31 to $32, base, Pittsburgh, and forging $36 to $37.

Youngstown, O.—With sheet mill operations at about 40 per cent there is not much demand for sheet bars or slabs, but there is slightly more for billets due to a gain in hot-rolled strip operations. Quotations are unchanged.

Cleveland—Specifications for sheet bars, billets and slabs show a slight improvement, though the leading merchant producer here continues to operate only six of its 14 open hearths. Prices are unchanged at $31, Cleveland and Youngstown.

Chicago—Few shipments are being made on semifinished steel contracts. Sales are light and the market is nominal at $32, base, Chicago, for billets, slabs and sheet bars.

Bolts, Nuts Demand Picks Up; Rivets Cut at Cleveland

Bolt, Nut, Rivet Prices, Page 95

Pittsburgh—Nut, bolt and rivet producers are taking no new business as consumers are not yet ready to cover forward requirements and current needs are small. Delay in announcing new automobile models is holding back considerable buying which otherwise would be done at this time. Operations are low and prices are unchanged at 73 off for bolts and nuts and 2.90c, Pittsburgh, for large rivets.

New York—The market is quiet and unchanged. Producers are operating at 45 to 50 per cent.

Rivet price has been reduced and several makers are now quoting 2.75c base, Pittsburgh, compared with 2.90c previously. Small rivets are now 70, 10 and 5 off list.

Cleveland—Orders for bolts and nuts have shown improvement for the first week of August. Sentiment is based on a firmer market and demands are better diversified. Operations will be stepped up to between 50 and 60 per cent of capacity by a leading local maker. Price of 73 off list continues. Rivets report an unchanged market though producers reduced price to 2.75c, Cleveland, for large rivets effective July 29, feeling reduction to be more in line with price recessions in other iron and steel products.

Chicago—Specifications for bolts, nuts and rivets are quiet, but have picked up slightly from a few of the tractor builders, due largely to foreign orders. Discounts are 64 to 73 off on carriage and machine bolts, and large structural rivets are unchanged at 3.00c, Chicago.

Iron Ore Specifications Pared Down for Season

Iron Ore Prices, Page 106

Cleveland—Consumers of Lake Superior iron ore evidently have completed the scaling down of their orders for the season as no more reductions have been received recently by producers. This leaves the total anticipated shipments at about 48,000,000 tons for the season. The market is devoid of new business. The Lake Superior Iron Ore association's final report for shipments this season to Aug. 1 follows:

	To Aug. 1, 1929	To Aug. 1, 1930
Escanaba	3,214,821	2,046,857
Marquette	2,262,363	1,581,916
Ashland	4,105,548	2,589,482
Superior	9,515,349	7,417,352
Duluth	10,429,324	7,249,852
Two Harbors	3,383,415	3,438,763
Total	32,910,820	24,324,222
1930 decrease		8,586,598

Cold Finished Looks to Detroit; Price Steady

Cold Finished Prices, Page 95

Pittsburgh—Fair demand for cold-finished steel is being experienced by makers here, with little change in volume and the price steady at 2.10c, Pittsburgh. Resumption of activity by automotive producers at Detroit is relied on to give a better volume shortly.

Cleveland—Producers look to this month as furnishing some impetus from the automotive trade although present operations are hovering at low ebb and cold finishers will average about 30 to 40 per cent of capacity. Auto parts makers hold large tonnages on the books for releasing. The 2.10c, Cleveland, price holds firmly and no shading is heard here.

Concrete Pending

(*Concluded from Page 99*)

ty, N. J. Specifications out about Sept. 1.

700 tons, station road bridge, Brecksville, O.

275 tons, infantry barracks, Fort Wadsworth, Staten Island, N. Y. Bids due Aug. 12.

250 tons, Fitkin hospital, Asbury Park, N. J.

200 tons, school, Chicago Heights, Ill.

112 tons, five bridges over Salmon river, Portland, Oreg.; bids received.

100 tons, water front bulkhead, for Hoboken Land Improvement Co., Hoboken, N. J. Allen N. Spooner & Sons, Pier 11, North river, New York, general contractors.

Unstated tonnage, armory, Decatur, Ill.

Scrap Code Reaffirmed

Washington—Federal trade commission has reaffirmed the present trade practice code for the iron and steel scrap industry with the exception of a change in the manner of appointing a trade practice committee. This means continuation of the resolution condemning unfair practices such as top-dressing, defamation of competitor, commercial bribery, fictitious bills of lading, and breach of contract.

Trade Group Heads To Meet

New York—How trade associations can help bring better business will be a major topic at the eleventh annual convention of the American Trade Association Executives at the Clifton house, Niagara Falls, Ont., Sept. 24-27. On Sept. 25 at the same place will be held a conference of industries which have held trade practice conferences.

Isthmian May Expand

New York—Isthmian Steamship Co. subsidiary of the United States Steel Corp., is reported attempting to purchase five vessels of the Gulf Orient line. The line is operated by the Tampa Interocean Co. under arrangement with the shipping board. Since the Isthmian Steamship Co. was reorganized recently it has been reported that expansion was contemplated.

Black Plate Exempted

Toronto, Ont.—An order-in-council dated July 24 and continuing to Jan. 1, 1931, exempts from import duties iron and steel sheets, cold-rolled, when imported for processing into tin plate.

Pipe

Industrials and Utilities Chief Buyers—No Additional Heavy Line Tonnages Appear

PIPE PRICES, PAGE 117

Pittsburgh—Heavy orders for line pipe, of large diameter, have put pipe makers in the best position of all steel producers and most makers of the larger diameters are well filled for the remainder of the year. No heavy tonnages have appeared recently and it might be difficult to find mill capacity for anything of size. Some demand for buttweld pipe is being received but in small lots as heating and plumbing requirements have not developed strongly.

Boston—There are sizeable tonnages of pipe on inquiry which promise a good tonnage total in the next few weeks. The only contract placed in the past week was for 500 tons of 10-inch pipe, reported placed with R. D. Wood & Co., by Baintree, Mass. Two utilities, the Providence & Rhode Island Gas Co. and the Boston Consolidated Gas Co., are said to be in the market for 1000 and 2000 tons respectively, with prospects that the Providence order will be placed this week and that of the Boston company later. Prices still are weak. Open quotations are $35 to $37 a ton f.o.b. foundry, for 6-inch and larger, but the top is only obtained on small tonnages. On sharp competition, $35 a ton is the approximate price.

New York—Placing of 2500 tons of 24-inch pipe by the Republic Engineering Corp., this city, leads cast pipe buying here. This tonnage is for the Middle West and was distributed, it is said, among several makers. Jersey City, N. J., opened bids Aug. 5 on 110 tons of 6 to 20-inch cast pipe and an additional tonnage of fittings. The Westchester county sewerage commission is expected in the market shortly for a modest tonnage. Prices are steady.

Cleveland—Conduit pipe is fairly active and good deliveries can be effected on merchant lines. Tonnage moving is not large. Prices are holding unchanged.

Birmingham, Ala.—A few lettings have been received from the southern territory with some additional business from the far west. Delivery of pipe still is good. Pipe base price is unchanged.

Chicago—Industrial and utility companies are the chief buyers of cast water and gas pipe in the North Central markets. Municipal inquiry remains light, and railroads are taking virtually no tonnage. Dayton, O., has specifications out for about 2000 tons of 24-inch and smaller cast pipe, no date being set for bids. St. Paul took bids Aug. 5 for about 150 tons of 12-inch cast pipe. Prices are unchanged for 6 to 24-inch sizes at $37 to $38, base Birmingham.

Contracts Placed

2500 tons, 24-inch cast pipe, Public Engineering Corp., New York, distributed among several makers; pipe is for Middle West.

500 tons, 10-inch, Braintree, Mass., awarded to R. D. Wood & Co.

Contracts Pending

2000 tons, Boston Consolidated Gas Co.

2000 tons, 24-inch and smaller cast pipe for Dayton, O.; no date set for bids.

1000 tons, Providence & Rhode Island Gas Co.

172 tons, 6 and 12-inch, class B, Phoenix, Ariz., for improvement of Central avenue. Bids opened.

150 tons, 12-inch cast pipe for St. Paul; bids Aug. 5.

145 tons, 8-inch, Portsmouth, N. H., bids open Aug. 4.

110 tons, 6 to 20-inch cast pipe, Jersey City, N. J.; bids opened Aug. 5; also small tonnage of fittings.

100 tons, Saugus, Mass.

100 tons, 6-inch, Salem, Mass.

Krupp Nirosta Fits Out Office with Its Metal

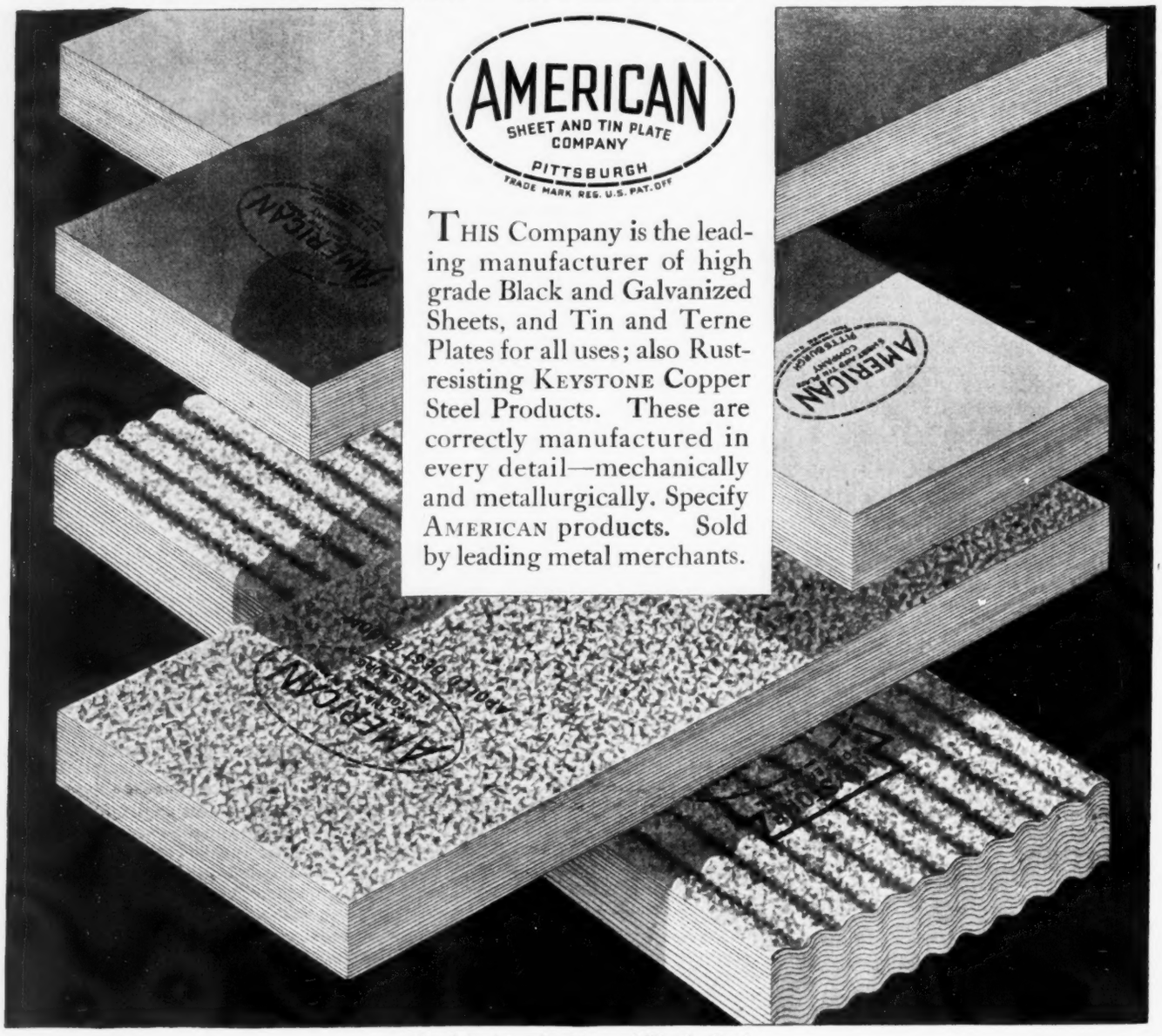
New York—An office on the 26th floor of the Chrysler building has been decorated and fitted throughout in the same metal that gleams from its lofty tower. The room is paneled with Nirosta sheets, ground to a satin finish around the borders with a raised polished center. The decorative design has been etched into the metal. A display of various products of the rust-resisting metal has been arranged. The office and display room are maintained by the Krupp Nirosta Co. Inc. for the benefit of 48 American licensees.

Revises Woodworking Code

American Standards association, New York, in co-operation with the United States department of labor, manufacturers, and other interested

AMERICAN STEEL SHEETS

BLUE ANNEALED — BLACK — GALVANIZED — AND SPECIAL SHEETS



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AMERICAN SHEET AND TIN PLATE COMPANY	COLUMBIA STEEL COMPANY	ILLINOIS STEEL COMPANY	TENNESSEE COAL, IRON & RAILROAD CO.
AMERICAN STEEL AND WIRE COMPANY	CYCLONE FENCE COMPANY	NATIONAL TUBE COMPANY	UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors — Columbia Steel Company, San Francisco, Los Angeles, Portland, Seattle, Honolulu. *Export Distributors* — United States Steel Products Company, New York City.

organizations has revised the safety code for woodworking plants. An important revision is the safe limiting speeds for circular saws. Copies of the bulletin may be obtained from the superintendent of documents, Washington for 10 cents.

Steel Operations Hold at About 60 Per Cent

Pittsburgh—General steel mill operations are close to 60 per cent, with the Steel corporation at about 58 per cent. Sheet production is at 54 per cent and tin mills at 70 per cent.

Buffalo — Operations are down this week to 56 per cent, compared with 59 per cent last week. The reduction is due to a change over of furnace units in the largest district steelworks. Restoration of the 59 per cent rate is anticipated by the last of this week.

Chicago — Ingot production is about 55 per cent, virtually unchanged from a week ago. Of the 36 steelworks blast furnaces, 17 are active. Plate mills lead in finished activity, at about 80 per cent.

Youngstown, O.—Mill operations continue at an average of about 60 per cent of capacity this week. Pipe mill operations which are at 70 per cent are mainly responsible for this average and take care of most of the steel tonnage produced. Of the 51 independent open hearths, 26 are in operation with bessemer steel output at 60 per cent and Corporation steel production at 55 per cent. Sheet mill operations are slightly better, with 51 of the 120 independent units engaged. Sheet mills of Sharon Steel Hoop Co. and at the Falcon plant of Empire Steel Corp. resumed this week, but Mahoning Valley Steel Co. suspended operations for a week. Strip mill operations are lower with output not above 50 per cent, but tin plate operations are averaging 70. Independent bar mills are operating at 50 and those of the Corporation at 60.

Cleveland—Sixteen of 34 open hearths will be in production this week, representing a 48 per cent ratio of the district's capacity, and a 2 per cent decline from last week. Corrigan, McKinney have dropped their active furnaces to six of 14 and American Steel & Wire Co. operates six of seven for the week.

Birmingham, Ala.—Estimate is that steel production and finishing mill operations are at 60 to 65 per cent. Better feeling is expressed with turning point seen for this month.

Wire

Dull Period Felt Passing—Heat Wave Handicaps—Prices Remain Unchanged

WIRE PRICES, PAGE 95

Pittsburgh — Dullness continues with practically no demand, even those who supply automotive industries showing little interest in requirements. Nut and bolt makers and others using wire for supplying automobile builders have not yet felt the influence of the increased production by the latter. Prices are unchanged at 2.30c, Pittsburgh, for bright plain wire but there has been no buying to test the strength of this figure. Nails continue to lag, and $2.15, Pittsburgh, for small lots and $2.05 for carloads to jobbers, are the prevailing quotations.

Worcester, Mass.—July was a poor month for wire production, the lowest of the year. The feeling that the bottom has been passed has given the market an assurance that may probably show results by the time fourth quarter specifications are out. Plain bright wire to dealers is holding at 2.40c, base, Worcester.

New York—Some jobbers here have protection on wire nails. This is the first in considerable time that this disposition has been noted. The minimum to jobbers is $2.05, Pittsburgh, with the spread to the merchant trade $2.10 to $2.15. Bright wire is unchanged at 2.30c, Pittsburgh, subject to occasional concessions. Little wire demand prevails.

Cleveland—Demand continues at the same pace as recent weeks and is generally featureless. Prices on wire and wire products by a local maker are firmly held, but some others report concessions. Nails, while going at $2.15 are in some cases reported at $2.10 and even $2.05 on attractive tonnages. The continued hot weather will seriously impair country purchasing and one producer believes will hold wire products slow for the next eight months at least.

Chicago—Western wire producers feel the dull period is passing slowly, but find no perceptible gain in fresh tonnage. Orders are holding their own. Earlier optimistic views on the late summer woven-fencing business are being revised owing to the droughth and hot weather, and it is probable buying will be under expectations. Low cotton prices have affected jobber sales of common wire products in the more southerly markets. Price pressure from buyers is insistent, but nails now are being quoted $2.15 to $2.30, Chicago or western mills. Galvanized wire is unchanged at 2.80c to 2.90c.

Warehouse Orders Show No Gain After Price Cuts

Warehouse Prices, Page 117

Chicago—Warehouse sales are showing no gains. Reduction of $2 in Chicago and St. Paul prices a week ago has had no effect. Sheet jobbers are accumulating heavier stocks.

New York—Jobbing prices are unchanged, with trading light. Some interests look for improvement this month, but little in the way of substantial gain before the latter half of September.

Philadelphia—Warehouse interests report that prices remain unchanged and that demand is only fair.

Buffalo—Reduced prices have not stimulated trade but are placing warehouses in a more advantageous position to compete for business. July sales were somewhat below those of last July.

Cleveland—Local iron and steel warehouses continue to receive a relatively light volume of orders. Any improvement, responsibility for which lies with the recent price reductions, is exceedingly difficult to find. August is looked forward to with considerably more enthusiasm than was discernible a month ago. Prices, since the reductions, are being well maintained.

Cincinnati—Recent reduction of prices on hot-rolled heavy steel products by warehouses has not yet had an apparent effect on volume, which is comparable to June and July. Orders continue to be for small tonnages.

Baltimore—Jobbers here have reduced their price on galvanized sheets by $5 a ton. The new price is 4.25c, base delivered locally for No. 24 gage in lots of 50 to 249 bundles with differentials on similar quantities up to 5.25c on lots of one to nine bundles.

St. Louis—July represented the low point for jobbers so far this year. Outlook for August is more hopeful, specifications already received indicating that the present month will make a better showing. Galvanized roofing and cooperage items are moving better.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$17.50 to 18.00
Pittsburgh, district fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Valley, furnace	18.00
Cleveland fur., local del.	18.00
Philadelphia, delivered	19.26 to 19.76
Virginia, furnace	17.75
Granite City, Ill., fur.	18.50 to 19.00
Buffalo, fur., local del.	18.50
Buffalo, del. Boston	21 41 to 21.91
Buff., all-rail Brooklyn	20.91 to 21 41
Buff., all-rail, Newark	19.28 to 19.78
Ala., Bir. fur., local del.	14 00
Alabama, del. Chicago	18.01
Alabama, del. St. Louis	17.42
Alabama, del. Cincinnati	16.19 to 17.19
Alabama, del. Cleveland	18.51 to 19.01
Ala., Phila., dock del.	17.25 to 18.25
Ala., Balt., dock del.	17.00 to 18.00
Alabama, New York dock	18.00 to 18.50
Ala., Boston dock del.	20 21
Tenn., Bir. base, local del.	14.00
Tennessee, del. Cin.	16.19 to 17.19
Montreal, delivered	23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	19.00
Buff., all-rail, Brooklyn	21.41 to 21.91
Buffalo, all-rail, Newark	19.78 to 20.28
Buffalo, del. Boston	21.91 to 22.41
Virginia furnace	18.25
Eastern, del., Phila.	19.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	20.00
Eastern, del., Phila.	20.26 to 20.76

MALLEABLE

Chicago, furnace	17.50 to 18.00
Cleveland fur., local del.	18.00
Pittsburgh district fur.	19.00
Pittsburgh, delivered	19.63 to 20.13
Valley furnace	18.50
Buffalo fur., local del.	19.00
Eastern Penna., delivered	19.26 to 20.91
Granite City, Ill., fur.	18.50 to 19.00
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh dist. fur.	18.50
Pittsburgh, delivered	19.13 to 19.63
Eastern Penn., del.	18.00 to 18.50
Buffalo fur., local del.	18.00
Montreal, delivered	22.50
Valley furnace	18.00

BESSEMBER

Valley furnace	18.50
Pittsburgh, delivered	20.26

LOW PHOS

Valley fur., standard	27.00
Philadelphia, standard	24.26 to 24.76
Furnace, copper-bearing	23.00 to 23.50

GRAY FORGE

Pittsburgh district fur.	18.00
Pittsburgh, delivered	18.63 to 19.13

CHARCOAL

Lake Superior, del. Chicago	27.04

SILVERY

Jackson County, O., fur., in per cents

5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50 to $23.00; 9—$23.00 to $24.00; 10—$23.50 to $27.00; 11—$24.50 to $28.00; 12—$25.50 to $30.00; 13—$26.50 to $32.00.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents

10—$29; 11—$31; 12—$33; 13—$35; 14—$37; 15—$39; 16—$42; 17—$45.

Coke

Prices Per Net Tons

Beehive Ovens

Connellsville furnace	$2.50 to 2.60
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	5.50
Portsmouth, O. ov., Connell. basis	5.50
Buffalo ovens	8.00 to 8.50
Detroit ovens	8.50
Philadelphia, del.	9.00

Iron Ore

LAKE SUPERIOR ORE

Gross Ton, 51½%, Lower Lake Ports	
Old range	$4.80
Mesabi	4.65
Old range	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58.65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.50 to 11.00
North African low phosphorus	10.50
Swedish basic, 65%	9.50 to 10.50
Swedish low phos.	11.00
Spanish, North African basic, 50 to 60%	9.50 to 10.00
Newfoundland fdy., 55%	9.00
Tungsten, spot and future short ton unit, duty paid	$11.75 to 12.00
Chrome ore, 48%, net ton c.i.f.	$21.50 to 22.50

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	27 to 28 cents
Indian, 48-50%	30 cents
Brazilian, 46-48%	25 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	$43.00
Georgia, Alabama	40.00 to 47.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	35.00 to 38.00
Georgia, Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham, Ala.	50.00 to 51.00

MAGNESITE BRICK

Per net ton

9 x 4½ x 2½	65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore base	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	36.30 to 37.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	36.00
Forging, Philadelphia	41.30 to 42.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$99.00
*Ferromanganese, del. Pittsburgh	103.79
Spiegeleisen, 19-21%, domestic fur. spot†	33.00
*Ferrosilicon, 50 per cent, freight all., c. l.	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do., one ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton, carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Fluorspar

85 and 5 per cent grade

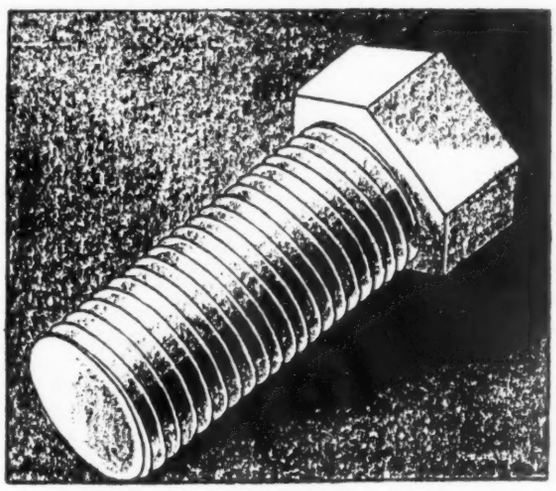
Washed gravel Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide, gross ton	19.50

INCREASED PRODUCTION

INCREASED production and lowered costs accompany the adoption of Carnegie Manganese Steels. This group of steels is composed of numerous grades suitable for various purposes and their excellent quality is the result of many years of manufacturing experience. In many cases they are substituted for more expensive steels at a considerable saving, without loss of efficiency in the finished product.

Carnegie Carbon Manganese Screw Stock, one of the grades in this group, is a low carbon, high manganese, high sulphur steel, particularly suitable for threading or other high speed cutting. Its free-cutting qualities closely approximate Bessemer Screw Stock and insure a long tool life and continuous machine operation. Many automatic machine operators prefer it to Bessemer on account of its consistent uniformity. Suitable heat treating and case hardening develop a fine grained, uniformly hard case and tough ductile core. The high manganese content insures a clean steel and aids in carbon penetration. The desired depth of case is thus secured in shorter time at carburizing temperature, resulting in increased production and savings in fuel and pot costs. Other grades of this type are obtainable in carbon ranges up to .50% where higher physical properties are important factors.

These Carnegie Carbon Manganese Screw Steels are furnished to many prominent shafting concerns who use them to supply their customers' requirements for high quality products. We invite you to make a comparative test with the steel you are now using.



CARNEGIE STEEL COMPANY

Subsidiary of
United States Steel Corporation

PITTSBURGH, PA.

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CARNEGIE
CARBON MANGANESE STEELS

Pig Iron

Consumption Expected to Improve This Month—Current Sales Light and Scattered

PIG IRON PRICES, PAGE 106

Pittsburgh—Sales of pig iron are limited mainly to small lots of foundry grades. Steelmaking iron is inactive. Merchant stacks find stocks of some grades exhausted but demand is not sufficient for increasing production. Prices are untested and unchanged at $18, valley, for foundry and basic, and $18.50 for malleable and bessemer.

Boston—Melters manifest more interest in the market and producers look for an increase in business this month. Inquiries include one for 1000 tons. Sales in the past week totaled 1500 tons. Buffalo No. 2 plain, No. 2X and No. 1X are obtainable at $16, furnace, and makers east of Buffalo are meeting those prices. Southern iron does not figure in this market at present.

New York—Pig iron sales in the past week again totaled 7000 to 8000 tons. Inquiry includes a fair tonnage for the General Electric Co.'s plants at Lynn, Everett and Pittsfield, Mass. American Locomotive Co., New York, is expected in the market shortly. Prices are steady at $16 to $16.50, base, Buffalo, with occasional waiving of silicon differentials. Southern iron is $18 to $18.50, New York docks.

Buffalo—Purchases of pig iron for local consumption are larger this week, but demand in the East has dropped. Several shippers want canal boats to load iron late in August. Prices are unchanged.

Youngstown, O.—A larger number of small orders for immediate shipment are noted. In some instances furnaces have to dip into stocks to supply customer's needs. Quotations continue steady at $18, furnace, for No. 2 and basic, and $18.50 for bessemer and malleable.

Cleveland—Producers expect to make larger shipments of pig iron in August than they did in July. The July rate was the lowest thus far in the year. Those supplying the automotive industry say the improvement in automotive operations, actual and in prospect for this month, are reflected to some degree in shipping specifications. Larger consumption by the automotive industry is expected to have a strengthening effect on the pig iron market. Furnace interests with main offices in Cleveland booked approximately 13,000 tons in the past week, slightly more than in the week preceding. Some important melters are making tentative inquiries. The southwestern Ohio melter who was in the market a week ago for 1000 tons has not closed. The market is a shade easier in competitive Ohio districts, as less than $17, base, furnace, has been noted. Freight differentials are absorbed and silicon differentials waived by sellers in some instances. The Cleveland price usually quoted is $18, base, for local delivery.

Philadelphia—Sales of low phosphorus pig iron aggregating 2000 tons feature the market. Numerous small sales of foundry iron are noted. Eastern Pennsylvania foundry iron continues $18.50 to $19, base, furnace.

Chicago—Melters continue to bargain for lower prices, although pressure from some quarters probably is less marked than late in July. A reported sale of 10,000 tons to an important melter in Wisconsin a week ago has been revised to 5000 tons or less. A recent sale to an automotive buyer in this district is now reported as 5000 to 6000 tons. A western Michigan stove company bought 500 to 1000 tons. Buyers report offers of $17, but the base grades are being held at a minimum of $17.50, Chicago, except iron moved from docks here.

Cincinnati—New orders for pig iron reached a low mark for the year during the past week, with a total of about 1500 tons. A sale of southern iron to a northern Indiana melter is reported to have brought $12.50, base, Birmingham. The Marmon Motor Car Co., Indianapolis, is inquiring for 500 to 1000 tons of foundry iron.

St. Louis—New business in the pig iron market is light. Sales in the past week totaled 3500 tons, of which the St. Louis gas & Coke Corp. booked 2000 tons. Producers have been mainly concerned with obtaining specifications on contracts previously placed and have had to adjust prices. Recent sales have been below list prices to average with tonnages purchased earlier at $2 to $3 a ton above present quotations. Such concessions, however, are not made on distinctly new orders.

Birmingham, Ala.—Pig iron sales continue small, and the aggregate is about equal to the output. Surplus on furnace yards Aug. 1 was slightly above that on July 1. Prices are steady.

Toronto, Ont.—Demand for pig iron continues to decline, and bookings for the week did not amount to more than 1000 tons. The movement on contracts is fair. Prices are unchanged.

Ferroalloys Quiet; Tungsten Taken Out

Ferroalloy Prices, Page 106

New York—While contract tonnage is being sustained at a volume comparable with July, spot business in spiegeleisen started the new month slowly. Spot carloads of domestic spiegeleisen, 19 to 21 per cent, are $33, furnace, subject to differentials on larger quantities. Ferromanganese is $99, duty paid, tidewater, on lots of carloads to 500 tons annually. Tungsten content of tungsten materials remaining in bonded warehouses at the beginning of June was 842,530 pounds, a reduction of 460,000 pounds in a month. This big cut was due to haste to beat the new tariff. The various special ferroalloys are quiet and unchanged.

Pittsburgh—With steel production at a low rate specifications for ferroalloys are infrequent and for small tonnages. Prices are unchanged.

Chicago—Fair sales of ferromanganese and 50 per cent ferrosilicon are reported. Shipments in August are expected to gain slightly over the year's low point reached in July. Ferrochrome orders are off sharply, due to reduced operations at gray iron foundries which are scheduled at 30 to 40 per cent.

Measures Lightning Strokes

A positive check on the estimate of the power obtained in a lightning stroke is now possible with a new device called the lighting stroke recorder. The instrument, in reality the meter, is comparable to the ordinary house meter in that it measures passing current and gives engineering some real facts with which to work. It was developed by the General Electric Co., Schenectady, N. Y., and natural lightning bolts are now being metered and measured by lightning investigators at the company's high voltage laboratory at Pittsfield, Mass.

A new and reasonable freight rate on scrap iron, in carloads, from Clarks, La., to Houston, Tex., has been prescribed by the interstate commerce commission.

Scrap

Dealers Avoiding Short Commitments — Market Believed To Be Near Bottom Level

Chicago—Chief activity in the iron and steel scrap market is the spirited closing of orders by dealers. Efforts to sell heavy melting steel at $12.25, the top of the prevailing spread, have been fruitless in the last few days. Dealers expect little consumer interest this month. Chicago & Northwestern sold 3000 to 4000 tons of railroad scrap in this market at a higher level of prices, in line with other recent railroad offerings. Production of several grades, notably cast borings, is restricted, but this is no factor in the market as the three borings consumers have heavy reserves. Prices have shown little fluctuation in the last three weeks.

Boston—For the second consecutive week prices are firm, indicating a stronger undertone. Carload buy-

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

HEAVY MELTING STEEL

Birmingham ..	10.50 to 12.00
Boston dealers	8.50 to 9.00
Buffalo, No. 1..	13.00 to 13.50
Buffalo, No. 2..	11.00 to 11.50
Chicago	12.00 to 12.25
Cinci., deal.	11.25 to 11.75
Cleve., No. 1.....	12.00 to 12.25
Cleve., No. 2....	11 25 to 11.50
Det., No. 1 deal	10.75 to 11.25
Det., No. 2 deal	9.50 to 10.00
E. Pa. del. mill	12.50
N. Y. del. R. R.	9.00 to 10.00
N. Y. deal No. 2	6.25 to 6.75
N. Y., deal yd.	6.00 to 6.50
Pitts. No. 1	14.50 to 15.00
St. L., No. 1 sel.	11.25 to 11.75
Federal, Ill.	10.75 to 11,25
Granite C., Ill.	10.00 to 10.25
Valleys, No. 1.	15.00 to 15.50

COMPRESSED SHEETS

Buffalo, dealers	11.25 to 11.50
Chicago	10.25 to 10.75
Cleveland	11.50
Detroit, dealers	10.50 to 11.00
E. Pa. new mat.	11.50
Pittsburgh	14.50 to 15.00
Valleys	14.50 to 15.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cinti., deal.	9.75 to 10.25
Cleveland	9.00 to 9.25
Eastern Pa.	9.50 to 10.00
Pittsburgh	13.50 to 14.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	7.75 to 8.25
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.50 to 8.75
Buffalo	16.25 to 16.75
Chicago (3 ft.)	13.50 to 14.00
Chicago (2 ft.)	14.00 to 14.50
Cinti, deal.....	17.00 to 17.50
Detroit, deal....	15.00 to 15.50
Pitts. (open-hearth, 3 ft. and less)	17.00 to 17.50
St. Louis	14.00 to 14.50

STOVE PLATE

Birmingham ..	10.00 to 11.00
Boston, con.....	8.50 to 9.00
Buffalo	10.25 to 10.50
Chicago, net....	9.50 to 10.00
Cinci., deal. net	7.00 to 7.50
Det., net, deal..	9.00 to 9.50
Eastern Pa.	10.50
N. Y., deal. mill	6.00
St. Louis	9.00 to 9.50

COUPLERS, SPRINGS

Buffalo	16.00 to 16.50
Chicago	13.50 to 14.00
Eastern Pa.	17.00 to 17.50
Pittsburgh	17.50 to 17.75
St. Louis	12.00 to 12.50

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	10.50 to 10.75

LOW PHOSPHORUS

Buf., billets and bloom crops..	17.50 to 18.00
Cleve. bil. and bloom crops.	17.50
Eastern Pa.	17.50 to 18.00
Pitts. billet and bloom crops	19.00 to 20.00
Pitts. sheet bar crops	18.00 to 18.50

FROGS, SWITCHES

Chicago	13.00 to 13.50
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	12.00 to 12.25
Cleveland	8.75 to 9.00
St. Louis	10.50 to 11.00

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	7.50 to 8.00
Buffalo, No. 1.	10.00 to 10.50
Buffalo, No. 2.	13.50 to 14.00
Chicago, No. 1.	11.25 to 11.75
Chicago, No. 2.	12.00 to 12.25
Cinti., No. 2	11.25 to 11.75
Eastern Pa.	14.00 to 14.50
N. Y., No. 1 dl.	10.00 to 10.50
Pitts. No. 2	14.50 to 15.00
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	6.50 to 7.00
Eastern Pa.	12.00
N. Y., deal	7.25 to 7.50

BUSHELING

Buffalo, No. 1..	11.25 to 12.50
Chicago, No. 1	9.50 to 10.00
Cinn., No. 1 dl.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleve., No. 2....	8.25 to 8.50
Detroit, No. 1 new deal.	9.50 to 10.00
St. L. No. 1....	9.00 to 9.50
Val. new No. 1	13.25 to 13.50

MACHINE TURNINGS

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.35
Buffalo	8.00 to 8.50
Chicago	6.25 to 6.75
Cinn., deal	7.50 to 8.00
Cleveland	7.00 to 8.00
Detroit	5.75 to 6.25
Eastern Pa.	9.00
N. Y., deal	5.00 to 5.50
Pittsburgh	8.00 to 8.50
St. Louis	6.75 to 7.25
Valleys	10.50 to 11.00

BORINGS AND TURNINGS For Blast Furnace Use

Boston, deal.....	3.50 to 4.00
Buffalo	9.00 to 9.50
Cinn., deal.	7.75 to 8.25
Cleveland	8.75 to 9.00
Detroit, deal. ..	6.50 to 7.00
Eastern Pa.	7.00 to 7.50
N. Y., deal.	4.00 to 4.50
Pittsburgh	8.50 to 9.00

CAST IRON BORINGS

Birming. chem.	12.00 to 13.00
Birming. plain	7.50 to 8.50
Boston, chem...	9.00 to 9.25
Boston, deal. ..	4.00 to 4.35
Buffalo	9.00 to 9.50
Chicago	7.75 to 8.25
Cinn., deal.	7.75 to 8.25
Cleveland	8.75 to 9.00
Detroit, deal. ..	6.50 to 7.00
Eastern Pa.	8.50 to 9.00
E. Pa., chem.	13.50 to 14.00
N. Y., deal.	4.50
Pittsburgh	8.50 to 9.00
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cinn., deal	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	9.25 to 9.75
Chicago, net	8.50 to 9.00
Cincinnati	8.50 to 9.00
Eastern Pa.	10.50
N. Y., deal.....	6.50 to 7.00
St. Louis	10.00 to 10.25

FORGE FLASHINGS

Boston, deal	7.25 to 7.60
Buffalo	11.00 to 11.50
Cleve. ov. 10 in.	10.00 to 10.50
Detroit	9.50 to 10.00

FORGE SCRAP

Boston, deal. ..	6.00 to 6.50
Chicago	14.50 to 15.00
Eastern Pa.	12.00

ARCH BARS, TRANSOMS

Chicago, net ..	13.00 to 13.50
St. Louis	14.00 to 14.50

AXLE TURNINGS

Boston, deal. ..	6.75 to 7.00
Buffalo	11.50 to 12.00
Chi. steelworks	9.50 to 10.00
Cleveland	11.75 to 12.00
Eastern Pa.	11.00 to 11.50
Pittsburgh	12.50 to 13.00
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham ..	19.00 to 20.00
Bos., ship. pt.	16.00 to 17.00
Buffalo	16.00 to 16.50
Chicago	16.80 to 17.35
Eastern Pa. ..	21.00 to 21.50
St. Louis	16.00 to 16.50

SHAFTING

Bost., ship pt.	13.00 to 15.00
Chicago	16.25 to 16.80
Eastern Pa.	18.50
N. Y., deal.	13.00 to 14.00
St. Louis	13.00 to 13.50

CAR WHEELS

Birming., iron..	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron....	13.50 to 14.00
Buffalo, steel ..	16.00 to 16.50
Chicago, iron....	13.50 to 14.00
Chi., roll steel	14.50 to 15.00
Cincinnati	12.00 to 12.50
Pitts., iron	15.00 to 15.50
Pitts., steel	17.50 to 17.75
St. Louis, iron	12.00 to 12.50
St. Louis, steel	13.75 to 14.25
E. Pa. steel....	13.50 to 14.00
E. Pa. iron	14.50 to 15.00

NO. 1 CAST SCRAP

Birming., cup...	12.00 to 13.00
Buffalo (mac.)	12.50 to 13.00
Boston, textile..	11.50 to 12.00
Chicago, mach.	13.45 to 14.00
Chi., railroad....	11.20 to 11.75
Chicago, agri...	10.90 to 11.50
Cinn., mach. cup., gross ..	17.75 to 18.25
Cleve. cupola ..	13.50 to 14.00
Det., net deal....	10.00 to 10.50
E. Pa. cupola..	13.50
N. Y. cup. deal.	9.50 to 9.75
N. Y., del. loc. foundries	14.00
Pitts. cupola	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 ma.	11.50 to 12.00
St. L. No. 1....	10.50 to 11.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. Mach. cast	13.50 to 14.00
Buffalo, break.	8.50 to 9.00
Cleve., break ..	8.50 to 9.00
Detroit, auto, net deal.	11.50 to 12.00
Det., break., dl.	7.00 to 7.50
Eastern Pa.	12.00
N. Y. No. 1 dl.	8.00 to 8.50
N. Y. break. dl.	7.25 to 8.10
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, R. R....	15.00 to 15.50
Buffalo	15.00 to 15.50
Chicago, agri...	11.75 to 12.25
Chicago, R. R.	13.50 to 14.00
Cinn., R. R. dl.	15.00 to 15.50
Cinn., agri., dl.	14.25 to 14.75
Cleve., rail	15.50 to 16.00
Det. auto deal.	13.50 to 14.00
St. Louis, rail..	10.00 to 10.50

RAILS FOR ROLLING 5 feet and over

Birming. cup...	12.00 to 12.50
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Eastern Pa	13.00 to 13.50
New York	9.50 to 10.00
St. Louis	12.00 to 12.50

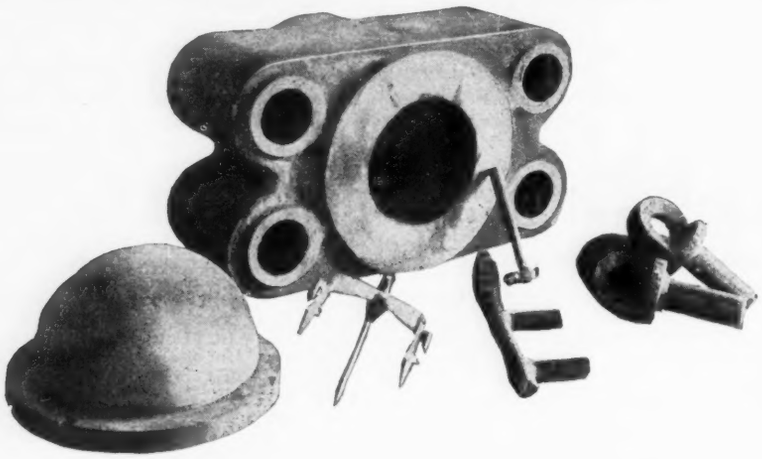
LOCOMOTIVE TIRES

Chicago, cut	15.00 to 15.50
St. L. No. 1.....	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.00 to 13.50
Pittsburgh	17.50 to 18.00
Eastern Pa.	17.00 to 18.00
Buffalo	17.00 to 17.50

ALL KINDS OF STEEL CASTINGS FOR ALL KINDS OF USES



Build With Steel Castings

Consumers are willing to pay for service and life in STEEL CASTINGS.

Why not an ALLOY at only a small increase cost in the castings.

Other costs are practically the same, then why spend good time and money machining anything but the best for the purpose.

Let us help increase the demand for better equipment.

We are at your service on design and engineering.

400 TONS CAPACITY ONE OUNCE TO FIVE TONS

EQUIPPED FOR QUANTITY PRODUCTION

Cast Steel parts with physical properties to suit their uses.

Regular Carbon Steels having tensile strengths from 60,000 to 150,000 pounds per square inch and elongations from 15% to 35%.

Alloy Steels having tensile strengths from 75,000 to 200,000 pounds per square inch and elongations from 10% to 30%.

The Alloy Cast Steel Company, Marion, Ohio

District Offices

1002 Tribune Bldg. NEW YORK, N. Y. | 416 First National Bank Bldg. CINCINNATI, O. | 1623 Conway Bldg. CHICAGO, ILL. | 429 Fisher Bldg. DETROIT, MICH. | 470 Hanna Bldg. CLEVELAND, O.

ing has improved. It is expected some buying of rails for shipment to Japan will begin soon.

New York—Relative steadiness of the past two or three weeks in scrap has given way to general revision in prices here. Some of the steel grades are moderately firm and one or two grades of cast scrap are unchanged. New consuming demand for ordinary grades is at a standstill.

Buffalo—Additional purchases of No. 1 heavy melting steel, selected grade, have increased the amount bought during the past two weeks to about 10,000 tons. Prices paid are said to have ranged from $13.35 to $13.50.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$15.00
Steel axles	13.00
Car wheels	11.00
Stove plate	10.00
Wrought pipe	5.00
Turnings	6.00
Heavy melting steel	8.00

TORONTO

Steel axles	10.00
Iron axles	12.00
Heavy melting steel	9.00
Turnings	6.50
No. 1 mach. cast (net)	11.00
Malleable (net)	9.00

A tonnage of stove plate was sold at $10.40, delivered.

Cleveland—Suspension of scrap shipments by a large steelworks consumer here coincident with its shutdown for an indefinite period accentuates the dull situation. Prices are fairly steady. Strength in the valley market has been a stabilizing factor. Valley middle interests have advanced buying prices from 25 to 50 cents a ton on the two steelmaking grades and some of this material is being attracted from the Cleveland district. Foundry grades are slightly stronger here and in the valley due to increased activity.

Cincinnati—A better sentiment is noted in the scrap market, with quotations on heavy melting steel and railroad wrought up 25 cents. Cast iron borings, grate bars, bundled sheets, loose sheet clippings and stove plate are lower on recent transactions.

St. Louis—Typical summer quietness prevails in the scrap market. Sentiment has improved but is not reflected in sales and shipments. For the first time in many weeks no price declines are noted. Certain grades are becoming scarce. Railroad offerings have fallen off. The week's list includes 2825 tons by the Southern Pacific; 13,175 tons by the Baltimore & Ohio, and 30,850 tons by the Pennsylvania.

Pittsburgh—Scarcity of heavy melting steel prevents selling ahead. Dealers are unable to cover at a profit. Borings and turnings are weak and some tonnages being laid down in yards. Bundled sheets have been advanced 50 cents due to scarcity. Dealers are paying more to fill contracts.

Birmingham, Ala.—The scrap market is listless. Heavy melting steel is $12, maximum, but little tonnage is being sold.

Toronto, Ont.—New business in the scrap market is dull. Orders are limited to immediate needs. Competition between dealers is keen and prices are being shaded.

Philadelphia—Scrap trading is restricted to scattered lots and prices appear firmer.

Ammunition Output Steady

Washington—Census bureau figures show little change in the ammunition industry from 1927 to 1929. In both years the number of establishment was identical at 20. Wage earners totaled 7217 in 1929 compared with 7602 in 1927. Value of products was $43,558,636 in 1929, against $41,230,365 in 1927.

Progress on Southern Mills

Birmingham, Ala.—Gulf States Steel Co. will have its new sheet mill completed and in operation by Aug. 10. Progress is noted on new sheet mill of Tennessee Coal, Iron & Railroad Co. at Fairfield.

Coke

Market Is Quiet and Prices Are Easy—Beehive Foundry Fuel Offered at $3.25 in East

COKE PRICES, PAGE 106

Pittsburgh—Coke sales are at a minimum and no contracting is noted. Inactivity of foundries lessons demand. Small lots for prompt shipment are scarce. Shipments on contract are reduced to a low point. Prices are unchanged.

Production of coke in the Connellsville region for the week ended July 26 was 20,020 tons, compared with 22,150 tons the preceding week and 103,580 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston—Indications point to a little better demand for foundry coke soon. Dealers stocked heavily with domestic grades prior to the 50-cent advance Aug. 1.

New York—Coke prices continue weak, with beehive furnace at $2.50, Connellsville, and standard brands of beehive foundry $3.50 to $3.75, Connellsville. Some distress lots of the latter grade have been offered at $3.25. Premium brands of beehive foundry coke are $4.85, Latrobe, Pa. By-product foundry coke is $9 to $9.40, delivered Newark, N. J.; $11, New England; and $9, Philadelphia.

Cincinnati—Movement of by-product foundry coke is slow. Lower prices effective Aug. 1 have not yet influenced new contracts.

Buffalo—Further curtailment of foundry operations has reduced coke purchases. While district by-product grades are steady at $8 to $8.50, it is reported there have been some Connellsville offerings at exceptionally low prices.

St. Louis—Production of by-product coke in this district has receded slightly. Specifications for August delivery indicate an increase, compared with the average for the past three months.

Birmingham, Ala.—Coke output in Alabama is at about 70 per cent of capacity. Independent producers are shipping some tonnage outside of the state. Coal producers look forward to considerable improvement in the market this fall, and they are planning to take advantage of the new low combination rail and water rates to other districts. A merger of two coal interests involving properties worth $2,000,000 is pending.

Find First Blast Furnace

New York—An Italian scientific expedition is reported to have discovered in Northern Rhodesia evidence that iron had been smelted by a primitive race. Skeletons found nearby indicate the smelting had been done in the stone age, about 4000 years ago.

Dudley Pre-Heater Corp., Detroit, has increased its capital from 30,000 to 50,000 shares no par value.

Pacific Coast

3800 Tons Structurals for Ford Plant Placed — Los Angeles Opens Bids on 2000-Ton Pipeline—Northwest Engulfed in Mid-Season Slump — Southern Pacific Delays Rail Buying

San Francisco—*(By Air Mail)*—Demand for iron and steel products the past week was confined to a small number of projects involving any considerable tonnage. New inquiries are slow and pending business is by no means large. Important developments included the award of 3800 tons of structural steel for the new Ford plant at Richmond, Calif., and the opening of bids on 2000 tons of plates for a pipe line for Los Angeles.

Pig Iron and Coke

Little or no change is noted in the pig iron and foundry coke markets, both sales and inquiries calling for small tonnages only. Prices remain unchanged from those quoted last week.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Movement of reinforcing bars was confined, with two exceptions, to lots ranging from 20 to 60 tons. So far this year awards aggregate 36,571 tons, compared with 53,215 tons for the same period last year. Unstated interests took 215 tons for a water system in Calgary and 182 tons for a bridge in Siskiyou County, Calif., over the Shasta river. No awards have yet been made on the 2500-ton lot for the Ford plant at Richmond. Bids were opened this week on 112 tons for five bridges over the Salmon River in Oregon. Merchant bar steel continues to move in small lots only. Prices on this class of material appear firm at 2.25c, c.i.f., while out-of-stock quotations on reinforcing bars are firm at 2.50c, base, on carload lots.

The Western Pipe & Steel Co. was low bidder on 2000 tons for a 36 and 42-inch welded steel pipe line for Los Angeles. No other awards or inquiries of importance were reported. Quotations continue unchanged at 2.15c, to 2.25c, c.i.f.

Shape awards this week aggregated 4723 tons, bringing the total for the year to date to 69,268 tons, compared with 121,144 tons for the corresponding period in 1929. The Herrick Iron Works obtained 3800 tons for the Ford plant at Richmond and placed 3000 tons of plain shapes with the Columbia Steel Co., and will use 800 tons of foreign material. Other awards include 500 tons for a store in Pasadena, booked by McClintic-Marshall Co. The only new inquiry of importance involves 400 tons for Pier No. 1, San Francisco, bids on which will be opened Aug. 6. For the first time in over a year, plain shape prices are weak. While 2.25c, c.i.f., continues the general quotation, lots of 2000 tons and up have been quoted at 2.15c.

Other Finished Material

While it is reported that a number of eastern railroads are beginning to come into the market for their 1931 rail requirements, it is reported that the Southern Pacific will delay coming into the market for its requirements for at least sixty days.

Little of importance transpired in the cast iron pipe market. Awards were all confined to lots of less than 100 tons. Bids were opened on 172 tons of 6 and 12-inch Class B pipe for a street improvement project in Phoenix, Ariz. Movement of standard steel pipe is confined to small lots, most distributors having well rounded stocks in their warehouses. No pipe line inquiries of importance are current.

Fall Indications Favorable

Seattle—Midseason finds the iron and steel markets of the Pacific Northwest in a temporary state of inactivity. While no large tonnages are up for immediate figures indications are favorable for an increased fall turnover. In the meantime all awards are restricted to small lots. In California the mill base price of reinforcing steel is reported to have been advanced from 2.30c. No change has been made in the Northwest and concrete bars are steady and firm at this figure.

Bids were received yesterday and forwarded to headquarters at St. Paul for constructing the extension of the Great Northern railroad from Klamath Falls, Oreg., into California, a distance of 87 miles. Only two sections of the entire job are up for figures at present. The Western Pacific extension includes the following tonnages of steel: Structurals for viaducts and bridges, 5100 tons; 85-pound rails, 17,845 tons, as well as miscellaneous lots of steel for tanks and other equipment. Bids for this work are under consideration.

With the exception of logging and lumber, the manufacturing industries of Washington showed satisfactory totals for the first six months of 1930 compared with 1929, according to a survey just completed.

Public works awards for July to date are $8,139,674 and will probably exceed March which has the best record of the year thus far. July's totals have been increased by award of several large contracts for government roads in the Northwest.

Bars, Plates and Shapes

Few specifications are being received by local steel mills and awards are restricted to lots of less than 100 tons. Operations are unchanged but may be curtailed shortly unless business improves. The Northwest Steel Rolling Mills booked 100 tons of concrete bars for state highway jobs and miscellaneous work.

There have been no developments in plates or structurals. Mill prices on the former are firm at a minimum of 2.15c while shapes are holding firm at 2.25c. Specifications are awaited for the West Seattle pipe line estimated to involve about 10,000 tons of plates but no date for receiving bids has been announced. No important structural jobs are pending. Isaacson Iron Works, Seattle, took a small contract for steel involved in an addition to the state hospital at Steilacoom, Wash.

Finished Materials

Jobbing houses report business spotted, both mill and out of stock buying being light. No item is outstanding but light sheets appear to be in fair demand. Price lists are unchanged.

Old Materials

The market is unchanged. Receipts of steel scrap are in excess of consumption. Local mills are paying $9.50 to $11, gross, depending on quality and are more particular in making selections. Freight rates to Japan are unusually low but exporting houses report no demand in the Orient for steel scrap. Cast iron scrap is weak at $12.50, net ton, as foundries are buying only occasionally and in small tonnages.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2 points less. Wrought iron pipe, Pittsburgh base.

BUTT WELD

Steel In.	Blk.	Gal.	Iron In.	Blk.	Gal
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1 and 1¼	31	15
			1½ and 2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7 and 8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7 and 8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, Lap Welded Steel		f.o.b. Pittsburgh Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¼—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

SEAMLESS TUBING
Cold drawn; f.o.b. mill

Random lengths over 5 ft.....55%
Selected lengths, 1 to 18 ft.....53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. $37.00 to 38.00
Four-inch, Birmingham 41.00 to 42.00
Four-inch, Chicago ..... 49.20 to 50.20
Six to 24-inch, Chicago 45.20 to 46.20
Six-inch and over, N. Y. 38.50 to 40.50
Four-inch, New York .... 41.50 to 42.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	2.90c
Cincinnati	3.15c
Cleveland	2.85c
Detroit	3.00c
Houston	3.00c
Los. Ang.	3.40c
New York††	3.10c
Philadelphia	2.70c
Pittsburgh	2.75c
Portland	3.15c
San Frans.	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.15c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.10c
Chicago	3.00c
Cincinnati	3.15c
Detroit	3.00c
New York††	3.10c
Philadelphia	2.70c
St. Louis	3.15c
Tulsa	3.65c

REINFOR. BARS

Baltimore	2.50c-3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.10c
Cincinnati	3.15c
Cleveland	2.25c-2.44c
Detroit	2.30c-3.00c
Houston	3.00c
Los Ang. cl	2.40c
Los Ang. lcl	2.70c
New York	2.65c-3.10c
Philadelphia	2.55c
Pittsburgh	2.75c
San Fran. cl	2.30c
San Fran. lcl.	2.60c
Seattle	3.15c
St. Louis	3.15c
Tulsa	3.65c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los. Ang.	3.40c
New York	3.10c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York	3.30c
Philadelphia	2.60c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.25c
Tulsa	3.75c

NO. 10 BLUE

Baltimore	3.50c
Bost. 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.10c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
New York	3.40c
Portland	4.00c
Phila. *†	3.15c
Pitts.**	3.10c
San Fran.	3.80c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.545c
Tulsa	3.95c

NO. 24 BLACK

Balt. *†	3.75c
Boston	4.70c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Clev. ***	3.75c
Detroit	3.95c
Los Ang.	4.70c
New York	3.55c to 3.65c
Phila. *†	3.70c
Pitts. **	3.65c
Portland	5.00c
San Fran.	4.35c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GAL. SHEETS

Balt.*†	4.25c
Boston	5.45c
Buffalo	4.40c to 4.60c
Chicago (lc. del.)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.35c
Detroit	4.60c
Houston	5.40c
Los Ang.	5.10c
New York	4.25c
Phila. *†	4.25c
Pitts.**	4.20c
Portland	5.50c
San Fran.	5.00c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c-5.00c
Buffalo	3.50c
Chattanooga	3.30c
Chicago	3.10c
Cincinnati	3.35c
Cleveland	3.10c
Det. 3/16-in. & lighter	3.30c
Houston	3.65c
Los Ang.	4.30c
New York	3.40c
Philadelphia	3.00c
Pittsburgh	3.10c
Portland	3.50c
San Fran.	3.75c
Seattle	4.15c
St. Paul	3.35c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c-6.00c
Buffalo	3.90c
Chicago	3.65c
Cincinnati	3.90c
Cleveland	3.65c
Det. No. 14 & lighter	3.80c
New York	3.75c
Philadelphia	3.25c
Pittsburgh	4.10c
Seattle	5.15c
St. Paul	3.90c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.85c
Chicago	3.35c
Cincinnati	3.80c
Cleveland	3.40c
Detroit	3.65c
Los Ang. (a)	4.50c
New York	3.50c
Philadelphia*	3.40c
Pittsburgh	3.35c
Portland (a)	4.50c
San. Fran.(a)	4.25c
Seattle (a)	4.75c
St. Paul (a)	3.85c
St. Louis	3.60c
Tulsa	4.75c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

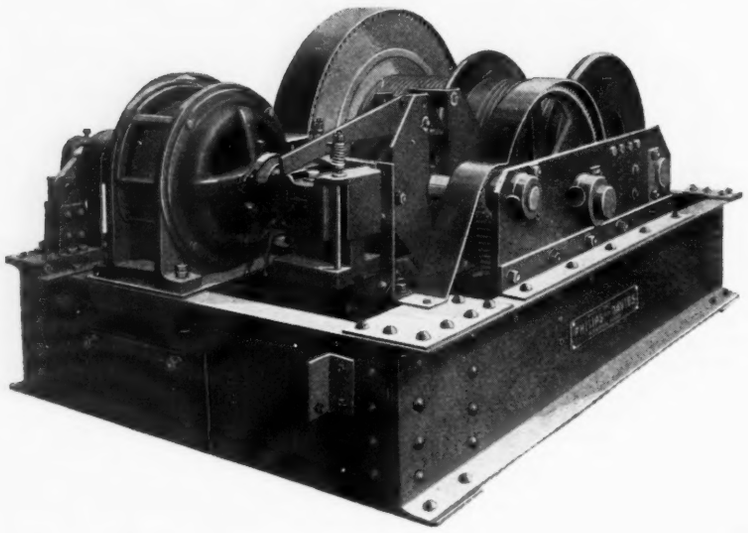
COLD ROLL. STRIP

Boston 0.100-in 500 lbs. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Clev. (b)	5.95c
Detroit	5.40c
New York	5.05c
Phila. (c)	4.95c

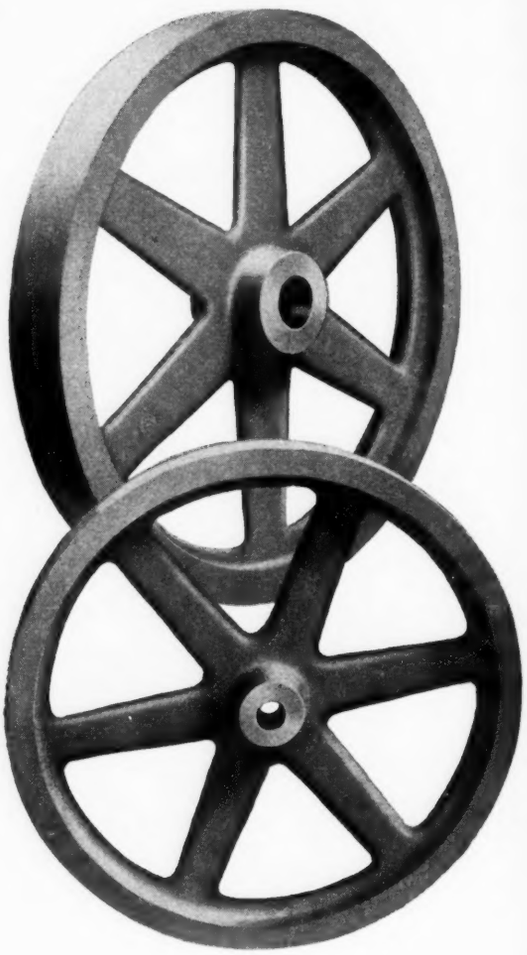
(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

PHILIPS & DAVIES HOIST

Castings by COMMERCIAL



Electric hoist for the operation of sluice gates in hydro-electric dams, manufactured by Philips & Davies, Inc., Kenton, Ohio. Castings by Commercial.



All gears used in the construction of P. & D. Sluice Gate Hoists are of the highest type cast steel, produced by The Commercial Steel Casting Company. These hoists are manufactured in sizes from 3¾ to 250 tons capacity. Requirements for gear castings of this kind are extremely exacting. To pass the rigid specifications of the manufacturer gear castings must be accurately and skillfully molded, high in tensile strength, and absolutely free from the slightest flaw or imperfection. Commercial has been consistantly successful in producing castings that meet these requirements.

THE COMMERCIAL STEEL CASTING CO.

Subsidiary of The Osgood Company

MARION, OHIO

Sales Offices

416 First National Bank Bldg. Cincinnati, Ohio	1002 Tribune Bldg. New York City	1623 Conway Bldg. Chicago, Ill.	Fisher Bldg. Detroit, Mich.	620 National Bldg. Cleveland, Ohio

Mill Products

Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices based on 11.50c, del., Conn. for copper

Sheets	
Yellow brass (high)	17.87½
Copper, hot rolled	20.75
Lead, full sheets (cut ½c more)	9.00
Zinc sheet (100-lb. base)	9.50
Tubes and Pipes	
Seamless yellow brass (high)	22.75
Seamless copper	23.00
Rods	
Yellow brass (high, full turnings)	16.12½
Naval brass	19.00
Anodes	
Copper, untrimmed	18.25
Wire	
Yellow brass (high)	18.37½

Old Metals

Dealers' buying prices, cents lb.

Heavy Red Brass	
New York	7.25 to 7.50
Chicago	6.75 to 7.00
Cleveland	7.50 to 8.00
St. Louis	7.00 to 7.50
Heavy Yellow Brass	
Cleveland	4.50 to 5.00
Heavy Copper and Wire	
New York	8.50 to 8.75
Boston	8.50 to 8.75
Chicago	8.75 to 9.00
Cleveland	8.00 to 8.50
St. Louis	7.50 to 8.00
Red Brass Borings	
New York	6.75 to 7.25
Yellow Brass Tubing	
Cleveland	4.50 to 5.00
Light Copper	
New York	7.00 to 7.50
Chicago	6.75 to 7.00
Cleveland	7.00 to 7.50
St. Louis	7.00 to 7.50
Light Brass	
Boston	4.00 to 4.25
Chicago	3.50 to 3.75
Cleveland	3.50 to 4.00
St. Louis	4.00 to 4.50
Zinc	
New York	2.00 to 2.25
Cleveland	1.50 to 1.75
St. Louis	2.00
Aluminum	
Clippings, soft, Cleveland	11.00 to 12.00
Clippings, hard, Cleveland	8.50 to 9.00
Borings, Cleveland	5.00 to 5.50
Cast, Cleveland	7.00 to 7.50
Cast, Boston	7.50 to 8.00
Cast, St. Louis	7.50

Secondary Metals

Remelt aluminum No. 12	15.00
Brass ingot, 85-5-5-5	11.00

Quicksilver Quiet, Steady

New York—Quicksilver is quiet at $118.50 to $120 a flask.

Metals

Lead and Antimony Swing Upward in Active Market—Copper and Zinc Are Less Active

New York—Despite the dull business situation, activity continues in the nonferrous metals. The center of activity in the past week, however, shifted from copper and zinc to lead and antimony. Buying of antimony has been stimulated by the fear that trouble in China will shut off supplies. Buying of lead is a continuation of the movement started a couple of weeks ago, but now has become great enough to send the price up twice for a net rise of ¼ cent.

Although there has been good forward buying of nearly all the pig and ingot metals, purchases of most of the mill products continue hand-to-mouth. Copper wire and cable have been booked ahead to a greater extent than other products.

Copper—Buying has quieted down as the stability of the price at 11.00c after the unusually big sales in July, supports users' view that there is no need for further haste. Large buying has been done for October, but a fair amount remains to be done for November and much for December. Some outside interests are willing to pay ⅛ cent to ¼ cent over the 11-cent market, but producers generally are unwilling to let them get much metal.

Zinc—After recovering to 4.75c, East St. Louis, the highest in more than two months, the prime western market fell back about ¼ cent. The recovery in July was slightly more than the break in June. Limited needs of the consumers, and lack of evidence that any fundamental change had come into the demand and supply situation, caused the market to lose about one-third of its recovery. Consumers bought well for several months ahead. The ore market went up several dollars to $33.50, and then in the past week fell back to a range of $31 to $32 a ton.

Tin—Consumer buying has been extremely light, but the market has been moderately strong, due to better statistics than had been expected. World visible supply was cut more than 600 tons, to below 42,000 tons. Deliveries here and on the continent exceeded expectations last month. The price has been remarkably steady around 30 cents.

Lead—Nearly all classes of users have been buying August and September shipments in good quantity. Prices went up 10 points several days ago, and on Monday New York went up 15 points and St. Louis 10.

Aluminum—New business continues small but prices are steady.

Antimony—The destruction of property and demoralization of business conditions at Changsha, China, has sent prices up more than 1 cent in the past week.—*Daily Metal Trade.*

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.25
Commercial xylol	0.25
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.15 to 0.16
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$1.90 to $2.00

Coke By-Products Users Curtailing Their Buying

New York—Benzol is barely steady in the absence of buying. Fuel demands are fair, but chemical uses are curtailed and the market more unsettled. Prices are unchanged, but there is some shading. The same condition prevails in toluol, solvent naphtha and xylol. Bulk of phenol is moving at 16.00c but buying is not active. Stocks are rather heavy in some instances. Production has been curtailed. Delivery is prompt.

Prices of the Week, Cents a Pound

	Copper delivered Electro	Copper delivered Lake	Copper refinery Casting	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
July 30	11.00	11.07½	10.87½	29.87½	30.25	5.25	5.15	4.75	22.90	7.35	35.00
July 31	11.00	11.07½	10.87½	30.00	30.30	5.25	5.15	4.72½	22.90	7.50	35.00
Aug. 1	11.00	11.07½	10.87½	30.12½	30.55	5.35	5.25	4.60	22.90	7.70	35.00
Aug. 2	11.00	11.07½	10.87½	.....	.....	5.35	5.25	4.60	22.90	7.75	35.00
Aug. 4	11.00	11.07½	10.87½	30.12½	30.60	5.50	5.35	4.50	22.90	8.25	35.00
Aug. 5	11.00	11.07½	10.87½	30.25	30.65	5.50	5.35	4.47½	22.90	8.30	35.00

Europe

Continental Prices Slump as Demand Ebbs—Trade Practically at Standstill

Birmingham, Eng. — (*European Staff Service*)—The British steel trade is in a parlous condition. There is no sign of any return of business in the immediate future, as works will be closing in a few days for the usual August stop week. In Scotland the annual holidays are taken before August and all the iron and steel works in Glasgow and district are closed. As many of the consuming works are also shut down, trade is at a standstill and there is not likely to be any resumption for at least a fortnight.

A large order has been booked by Cochrane & Co. of Middlesbrough for 35,000 tons of cast iron segments to the requisition of the underground railways of London. This is the only contract of outstanding interest in any of the markets.

Demand Is Restricted

At Birmingham the demand for steel is very limited. The engineering trades are experiencing the full effects of general trade depression. The motor and cycle trades have a great many unemployed and the engineering industry taken as a whole shows a percentage of 14.5 unemployed. Structural work is scarce and although a number of Midland engineers are kept busy preparing tenders, they are continually faced with the fact that competition is so keen that it is almost impossible to make a profit, the only alternative being to accept a contract at cost and keep the yards open.

Demand for building steel from the large works in Middlesbrough, Birmingham, and other centers is almost negligible. Some idea of the slackness in Sheffield is indicated in the fact that only 27 open-hearth furnaces out of 80 are operating.

The British Steel association maintains the price of structural steel on the ground that raw materials have not reduced sufficiently to allow finished steelmakers to make a concession. Meanwhile, competition from the Continent grows in intensity.

Joists still are supposed to be controlled by the cartel at £5 6s 6d ($25.87) f.o.b. Antwerp, but this price is not being maintained under the stress of adverse trade conditions, and in Birmingham it is stated that there are sellers at £4 15s ($23.08), making the price delivered Birmingham at £6 ($29.16). Such an attractive price would no doubt bring in a good deal of business were it not for the proviso under the rebate scheme in the British steel trade which puts the obligation upon contractors to buy British steel only if they are to secure the offered rebates in the case of finnshed material.

The outstanding feature of the Birmingham market is the slump in continental prices. Billets again are still nominally controlled by the cartel but business has actually been done at 5s ($1.21) below the official price at £5 6s ($25.75) delivered Birmingham.

A few moderately sized orders have been placed in Birmingham for small steel bars at £5 10s (26.73) delivered, and the same price is quoted for Belgian No. 3 iron. The stagnation is too pronounced, however, for any real buying movement. Moreover, while these low prices have been definitely quoted by certain merchants there are others who quite frankly state that they cannot buy from the Continent at that level. So that a good deal of confusion exists.

The volume of business in the Midland pig iron trade has contracted to very narrow limits. There is a strong feeling that the producers should drop prices at least another 2s 6d ($0.60), and as a meeting of the Central Pig Iron Producers association is due next Thursday it is confidently hoped that something will be done in this direction.

There is no doubt whatever that the position in this district is worse than it has been for years and at present the most optimistic cannot see any way out of the impasse. There will be no interest in business until August is over, but whether the furnaces will maintain their present output during the third quarter is a matter for conjecture as stocks are increasing at a rapid pace.

The only mills that have any work in hand in the Staffordshire finished iron trade are those producing marked bars. In other branches of the trade prices are cut finely and do not allow of any reduction owing to the dearness of pig iron.

Continental Steel Prices Are Lower

London—(*By Radio*)—The continental steel entente has reduced prices of billets by 7 shillings ($1.70) a ton, and beams by 6 shillings ($1.46). Most of the continental steel prices are falling. British producers fear foreign competition, owing to low offers made here. The markets are dull and the general slowness of production in Britain is accentuated by holidays. Export trade is quiet. Small shipments of East coast hematite are being made to Italy. A merchant steel syndicate is being formed in France. The domestic markets in that country are fairly active. Some improvement is noted in Belgium, while conditions in Germany are unsatisfactory.

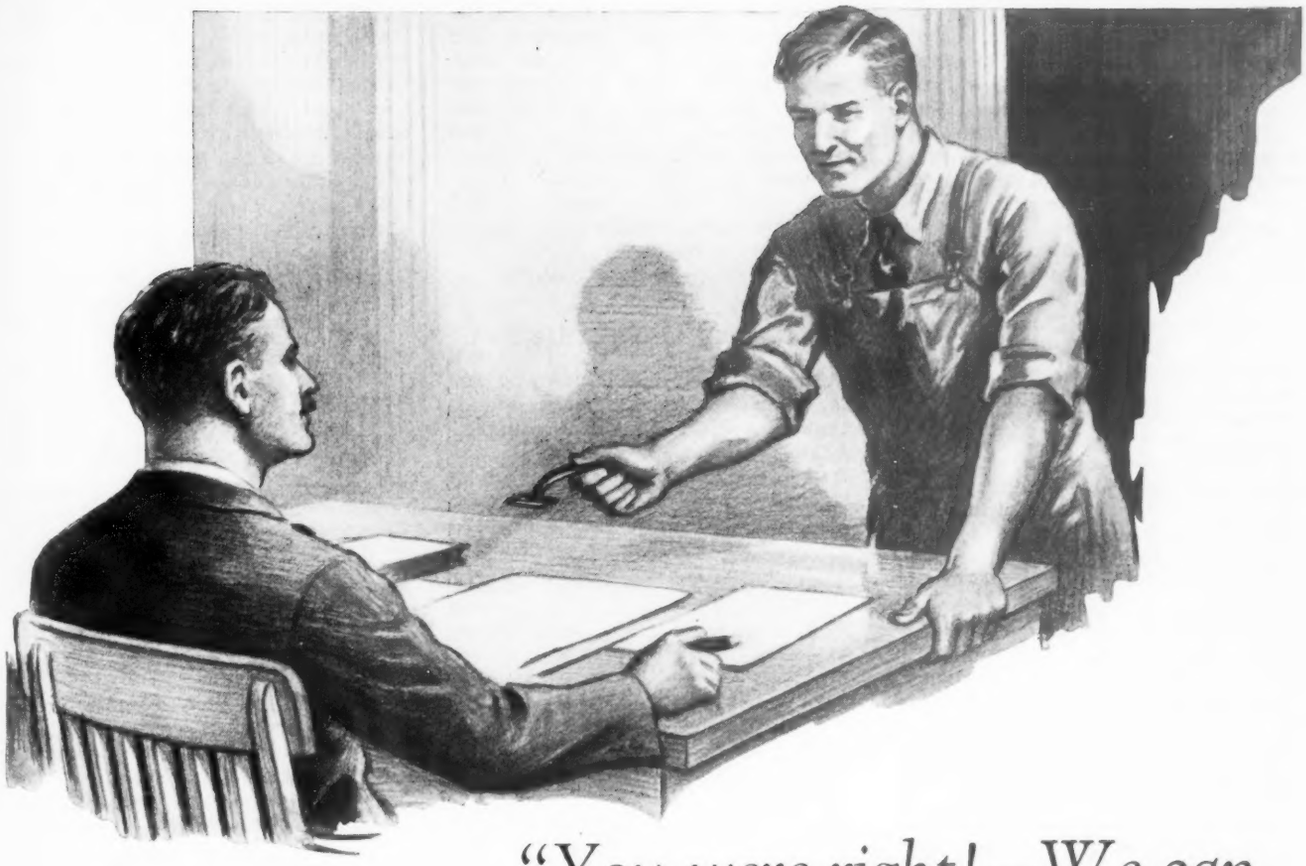
Steel Comptoirs Open Five Months Trial of Control

London—Formation of an international sales comptoir for semifinished steel and another for structural steel has resulted from an important meeting of the steel entente at Liege July 15, when the members all agreed on a definite scheme. The agreement was rendered easier by the withdrawal of an important Belgian dissentient firm, the Forges de Clabecq.

Under the new organization, orders for semifinished steel and for structural steel will continue to be received by individual works, transmitted to a central office, and executed only when authority has been received from the central office, and at a price which must not go below the minimum fixed by the central office. The central office for semifinished steel will be located in Seraing, Belgium, and that for structural steel in Paris. These will, in effect, be distributing offices, at the same time fixing minimum prices which must not be under-quoted by the member-firms.

Quotas Are Apportioned

Each member-country, and also each firm, is allocated a quota up to which the works can book orders authorized by the central office. Where a specific works has reached its quota, further orders will be distributed among other members. For the time being, the minimum prices which have been prevailing for semifinished steel and structural steel will continue to be enforced, namely: £4 14s ($22.85) f.o.b. Antwerp as the basis for 2¼-inch billets, basic bes-



Save with Steel

Steel may do the work just as well as the more expensive material you are now using.

"You were right!—We can make a real saving by using steel for these parts"

Like this manufacturer you may effect real economies by using steel in the fabrication of metal parts.

Such factors as these cannot be overlooked as potential savings:

1. Decrease in weight of finished product
2. Decrease in finishing cost
3. Increase in strength
4. Neat, clean cut appearance
5. Plating without undue preparation
6. Saving in shipping weight
7. Minimum breakage

It is savings like these that are inducing more and more manufacturers to specify Stanley Steel wherever blanking, bending and drawing are major operations.

We shall be glad to give you the benefit of our experience in specifying steel for particular operations

THE AMERICAN TUBE AND STAMPING PLANT
THE STANLEY WORKS
Bridgeport, Conn.

STANLEY STEEL

Hot and Cold Rolled

semer steel, and £5 1s 6d ($25) for beams.

The Forges de Clabecq has been opposing creation of comptoirs, and has been the cause of protracted negotiations. Finally, the firm has completely withdrawn from the steel entente. Most of the semifinished steel produced by the Forges de Clabecq is rolled into finished products by the works themselves, and consequently is not marketed.

Hope for More Comptoirs

Successful negotiations of the semifinished and structural steel comptoirs are raising hopes of formation, before the end of the year, of similar comptoirs for merchant bars, hoops and bands, and plates. However, owing to opposition, not only of the Forges de Clabecq but also of a number of small transforming firms which were cutting prices, the entente has decided to render the market for these products absolutely free. At the Liege meeting July 15 it was decided that the quota of production allocated to each member should be done away with, so that output and sales of these products will be carried on in complete and open competition. It is expected that the larger concerns, with lower production costs, will underbid the smaller firms and that these firms will either be driven out of business or compelled to submit to conditions of the entente. Control of production and sales of merchant bars, hoops and plates then will be resumed and definitely laid down similar to semifinished and structural steel.

Consequently, it now is anticipated that by Dec. 31 there will be international selling comptoirs for semifinished steel, structural steel, merchant bars, hoops and bands, and plates. It is agreed that if by Dec. 31, comptoirs for bars, hoops and plates are not constituted, the semifinished and structural steel comptoirs then shall be dissolved, and only the steel entente will remain as an organized body.

Luxemburg Output Less

Brussels—Production of pig iron in Luxemburg in May was smaller than in April and consisted of 208,823 tons of basic bessemer and 3345 tons of foundry pig iron. Output of steel ingots and castings in May was also below April, composed of 187,990 tons of basic bessemer, 681 tons of open-hearth and 356 tons of electric steel. Figures follow:

Mon. ave.	Furnaces on last day	Pig iron	Steel ingots and castings
1913	....	212,320	111,355
1927	39	227,710	200,595
1928	38	230,840	214,315
1929	37	242,175	225,605
1930			
Jan.	37	249,875	216,315
Feb.	36	231,326	214,857
March	35	248,983	225,285
April	32	221,209	198,250
May	....	212,168	189,027

British Imports Gain

London—Exports of pig iron, ferroalloys and other iron and steel products in June fell off from May. For the first half of the year total exports of iron and steel from Great Britain amounted to 1,797,540 gross tons, compared with 2,240,829 tons in the corresponding period of 1929, a decrease of 19.85 per cent. Imports of iron and steel products during first half totaled 1,533,039 gross tons, against 1,339,805 tons in the first half of 1929, an increase of 12.6 per cent. Comparative figures follow, in gross tons:

	—IMPORTS—		—EXPORTS—	
Mon. ave.	Pig iron and ferro-alloys	Other iron and steel	Pig iron and ferro-alloys	Other iron and steel
1927	50,715	316,455	27,580	322,100
1928	9,935	231,390	37,895	317,210
1929	12,310	222,410	45,430	319,520
1930				
Jan.	15,770	294,546	40,445	311,401
Feb.	24,252	235,144	26,865	267,422
Mar.	23,186	257,106	39,461	298,253
April	21,254	213,552	30,106	237,895
May	23,039	210,686	32,586	262,143
June	25,031	189,473	21,588	229,381

French Coke Output Up

Paris—Output of coke at French collieries in May exceeded that of April, and imports were less. Exports of coke from France in May were much larger than in April. Comparative figures follow:

Mon. ave.	Production	Imports	Exports
1913	335,620	255,835	17,085
1927	339,015	395,580	33,430
1928	366,660	447,330	34,810
1929	397,435	453,720	39,070
1930			
Jan.	414,797	442,754	37,473
Feb.	392,950	403,887	15,905
March	443,909	385,742	11,779
April	419,348	450,437	13,371
May	426,327	386,422	21,605

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, August 4	*British* Gross Tons U. K. Ports	*French* Metric Tons Channel Ports	*Belgium and Luxemburg* Metric Tons Channel Ports	*German* Metric Tons Rotterdam or North Sea Port
Export Prices f. o. b. Ship at Port of Dispatch—By Cable				
PIG IRON	£ s d	£ s d	£ s d	£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.44 3 7 6*	$14.61 3 0 0	$14.61 3 0 0	$14.61 3 0 0
Basic-bessemer	15.95 3 5 6†	13.39 2 15 0	13.39 2 15 0	13.39 2 15 0
Hematite, Phosphorus 0.02-0.05	17.29 3 11 0	24.82 630*	24.82 630*	17.78 3 13 0
SEMIFINISHED STEEL				
Billets	$28.85 5 18 6	$21.18 4 7 0	$21.18 4 7 0	$21.18 4 7 0
Wire rods	41.40 8 10 0	30.44 6 5 0	30.44 6 5 0	30.44 6 5 0
FINISHED STEEL				
Standard rails	$40.18 8 5 0	$31.66 6 10 0	$31.66 6 10 0	$31.66 6 10 0
Merchant bars	1.74c 8 0 0	.99c 4 10 0	.99c 4 10 0	.99c 4 10 0
Structural shapes	1.68c 7 15 0	1.06c 4 16 0	1.06c 4 16 0	1.06c 4 16 0
Plates, ship, bridge and tank	1.79c 8 5 0	1.22c 5 10 6	1.22c 5 10 6	1.22c 5 10 6
Sheets, black, 24 gage	2.17c 10 0 0	2.06c 9 7 6	2.06c 9 7 6	2.06c 9 7 6
Sheets, galvanized, 24 gage, corrugated	2.47c 11 7 6	2.52c 11 8 9	2.52c 11 8 9	2.97c 13 10 0
Bands and strips	2.17c 10 0 0	1.16c 5 5 0	1.16c 5 5 0	1.29c 5 17 6
Plain wire, base	2.06c 9 10 0	1.46c 6 12 6	1.46c 6 12 6	1.43c 6 10 0
Galvanized wire, base	3.04c 14 0 0	1.57c 7 2 6	1.57c 7 2 6	1.57c 7 2 6
Wire nails, base	2.39c 11 0 0	1.38c 6 5 0	1.38c 6 5 0	1.38c 6 5 0
Tin plate base box 108 pounds	$ 4.38 0 18 0	....	....	$9.01 1 17 0

*France

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.44 3 7 6	$19.31	490(2)	$17.08	610	$19.84 83
Basic pig iron	15.95 3 5 6	20.69	525(1)	13.72	490	21.15 88.50
Furnace coke	3.17 0 13 0	6.62	168	5.74	205	5.14 21.50
Billets	29.22 6 0 0	24.43	620	22.68	810	28.08 117.50
Standard rails	1.36c 6 5 0	1.46c	810	1.62c	1,245	1.47c 136
Merchant bars	1.74c 8 0 0	1.18c	655	1.17c	900	1.48c 137
Shapes	1.84c 8 10 0	1.26c	700	1.22c	940	1.45c 134
Plates, ship, bridge and tank	1.95c 9 0 0†	1.46c	810	1.46c	1,125	1.65c 153
Sheets, black, 24-gage	2.28c 10 10 0	2.72c	1,510	2.54c	1,950	1.36c 126
Sheets, galvanized 24 gage, corrugated	2.58c 11 17 6	3.52c	1,955	2.80c	2,150	3.67c 340
Plain wire	2.06c 9 10 0	2.03c	1,125	2.15c	1,650	2.34c 217
Bands and Strips	2.17c 10 0 0	1.34c	745	1.50c	1,150	1.72c 159

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.17) f. o. b. Ferromanganese £19 6s 0d ($93.99) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.66) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel, French, Belgian, Luxemburg, and German are for basic-bessemer steel.

Machinery

WHILE sales of machinery continue small, a revival of inquiry marks the week. This is due in part to return of executives from vacations, in part to a growing realization of the logic of buying equipment now when the market is favorable, and in part to tangible evidences of production revival in the Detroit district. In the East hopes are pinned on the electrical industry. The situation can be summed up by saying that while orders continue at a low ebb, there is a warranted improvement in morale foreshadowing a moderate industrial revival by fall.

New York—Machine equipment buying continues to drag. Some note a slight increase in inquiry, but comparatively little of such inquiry might be classed as active. Sales are confined to one or two units at a time and are well spread. The general market continues spotty. Prices are unchanged and delivery prompt. Builders generally continue on curtailed schedules, although some shops are adding to their forces.

Dealers and builders continue to hope for increased business in the fall. Many veterans in the machinery field do not expect a pronounced spurt but rather a gradual recovery from the mid-summer slump. It is pointed out that with three of the recent years' best buyers, the airplane engine, automotive and refrigeration industries, the gain is likely to be moderate. Hopes are pinned on electrical interests and the steel and material working industries. Railroads may take more tools during the last half of the year, but most dealers are not banking too heavily on this possibility.

Worcester, Mass.—The market is still marking time. With the exception of drum lathes, for which there has been some recent inquiry, most lines are quiet. Grinders have dropped away, textiles are weak and the inability to close on whatever scattered inquiry there is, still persists. However, the opinion is general that improvement is just around the corner.

Chicago—August prospects are dull in the machine tool market here. This is despite the fact that a number of manufacturing interests, which have weathered the depression without difficulty, are known to be checking closely on their replacement needs for the early autumn. A leading steelworks, which has had an inquiry out for a number of tools, has added a 32-inch drill and a 42-inch lathe to its inquiry. A number of scattered inquiries are before the market. Some believe that no marked pick-up in demand will occur before October. Several houses have carried over inquiries from July which promise fair sales, but in general it is indicated that August business will be much below last month. Dealers are eager to take advantage of bargains in used equipment. Used tool sales are slightly heavier than early in July. Chicago board of education will probably place additional business this month.

Cleveland—With the advent of August, inquiry has picked up and with this the morale of the machinery industry has taken a turn for the better. Several dealers report a marked revival of interest in quotations which have been out for some time. In more than one instance confidence is expressed that orders of considerable size are about to be closed. The return of key men to their desks after vacations may in part account for the revival of interest, but it is due primarily to the confirmation of rumors regarding a resumption of automotive manufacturing activities in the Detroit district.

Cleveland newspapers this week have published feature stories on the favorable effect of the Detroit revival upon the parts and accessory business here, and specific references are made to large parts manufacturers which are speeding up operations. The keen way in which parts manufacturers are watching each other's moves toward equipment replacement has already been pointed out. In the opinion of machinery men closely in touch with this situation the purchase of new and improved machines by one manufacturer in competitive parts lines is certain to precipitate similar action among several manufacturers. Employment bureaus report a distinct increase in the demand for draftsmen and designers on the part of machinery and tool builders, but no demand as yet for production men.

More than 75 per cent of eligible employes of General Electric Co., Schenectady, N. Y., have voted in favor of the company's employment insurance plan. The number of participants is increasing as the voting proceeds.

Rumor Spang, Chalfant Plans Welded Pipe Plant

Spang, Chalfant & Co., Pittsburgh, are reported planning a plant at Ambridge, Pa., for production of electrically welded pipe. Cost of the plant is placed at about $2,000,000. The company has denied that such plans are being prepared, although it was stated a short time ago when negotiations were being completed for a consolidation with the National Supply Co. that plant facilities would be extended. Spang, Chalfant operates plants at Ambridge and Etna, Pa. The former produces seamless tubes 2 to 15 inches in diameter while the Etna properties turn out welded pipe up to 24 inches in diameter. Annual capacity of the two plants is 650,000 tons. The company is investing about $500,000 in the Etna plant this year, largely for modernization rather than expansion, except that resulting from improved efficiency.

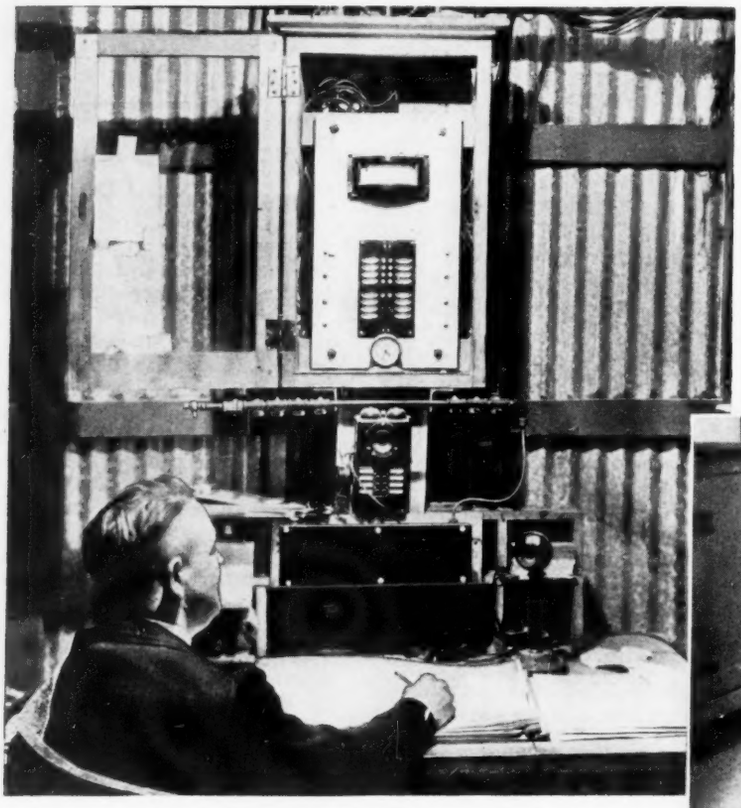
The electric welding process for production of steel pipe is being rapidly adopted by the steel industry. Republic Steel Corp. has been using this method for some time while new plants of the National Tube Co. and Youngstown Sheet & Tube Co. are scheduled to start operations shortly. Other producers of tubular products, such as the Jones & Laughlin Steel Corp., Bethlehem Steel Co. and Wheeling Steel Corp., have made no announcements concerning future plans.

Directors of Jones & Laughlin have authorized a $20,000,000 program and although details have been withheld it is believed part will be expended on the tubular department. Consummation of the Bethlehem-Youngstown merger would make it unnecessary for the former to provide electric welding facilities.

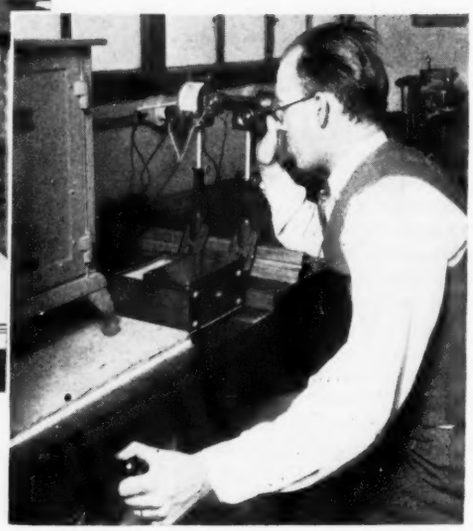
Farm Tool Exports a Record

Washington—Exports of agricultural machinery in the first half of 1930, at $78,997,334, compared with $72,068,581 in the first half of 1929 and set a new high record, according to the agricultural machinery division, department of commerce. Tractors accounted for 62 per cent of exports and showed an increase of 38 per cent over 1929. It is not believed Russia can absorb this year as many tractors as last year.

ENAMELS OF DISTINCTION



Control instrument room where foreman checks and rechecks temperatures, drafts, etc.



Electric micro-fusion furnace for determination of fusion ranges of frits and enamels.

EVER since Ferro put the making of porcelain enamels on a more scientific basis, there has been lively curiosity as to how a single company, virtually starting scratch, could so completely change the character of the enameling business.

One of the reasons is the indefatigable care with which Ferro enamels are made. In our Analytical and Control Laboratories every ounce of material is checked and rechecked for purity and uniformity.

Pyrometric control at the smelters as well as in the laboratory and electric micro-fusion tests for determining the flexibility of porcelain enamels play an important part in our laboratory work.

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FERRO ENAMEL CORPORATION

Porcelain Enamels — and Enameling Equipment

CLEVELAND, OHIO

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

BRIDGEPORT, CONN. — Heppenstall Forge Co., 95 Howard avenue, will award contract for a new plant unit. Cost is estimated at $40,000. Fletcher-Thompson Inc., 542 Fairfield avenue, is architect.

SOUTH PORTLAND, ME.—Maine Steel Products Co., manufacturer of marine and industrial hardware, is building an addition for the manufacture of Sargent snowplows. New unit will add 5000 square feet of floor space.

ATTLEBORO, MASS.—L. G. Balfour & Co., manufacturer of jewelry, has plans for a power plant, to cost $40,000 with equipment.

BOSTON—Joseph Beal & Co., 465 Atlantic avenue, is reported to be in the market for sheet metal tools and power presses, punches, shears and brakes.

BOSTON — Jameson Brothers, 30 Lawrence street, plan construction of a 1-story, 80 x 150-foot repair and service garage on Lawrence street. Cost is estimated at $60,000. J. F. Cullen, 162 Newberry street, is architect.

CAMBRIDGE, MASS. — Harvard college is receiving bids for a 3-story physics laboratory. Coolidge, Shepley, Bulfinch & Abbott, Ames building, Boston, are architects. Cost is estimated at $550,000.

CAMBRIDGE, MASS.—F. W. Webster Co., 340 Congress street, Boston, manufacturer of typewriter supplies, recently noted as planning a new plant unit at Hayward and Wadsworth streets, is having revised plans prepared for a 4-story, 100 x 210-foot plant. Densmore, LeClear & Robbins, 31 St. James avenue, Boston, are architects. Cost of the unit according to revised plans, $250,000. (Noted March 27.)

New York

BROOKLYN—Plant of Alexander Amitin, manufacturer of wrought iron furnishings, 269 Meserole street, recently was damaged by fire.

NEW YORK—Edwards Machine & Tool Co. has been incorporated with $70,000 capital by Dills & Towsely, attorneys, 100 East Forty-second street.

NEW YORK—New York Central railroad, 466 Lexington avenue, J. M. Doorly architect, plans to build a 3-story substation, 43 x 118 feet, at Twelfth avenue and 135th street. Cost is estimated at $80,000.

NEW YORK—Lehigh Valley railroad, 143 Liberty street, planning a 15-story freight terminal to cost over $7,500,000, at Eleventh avenue and Twenty-sixth street, will install conveying, elevating and other mechanical equipment as well as power equipment. Russell G. Cory, 30 Church street, is architect and engineer.

TICONDEROGA—Power plant of Industrial Paper Co. recently was damaged by fire. Loss is estimated at $3000.

Pennsylvania

BUFFALO—Ford Motor Co., Fordson, Mich., has a building permit for assembly building, oil house and boiler house here. Albert Kahn Inc., 1004 Marquette building, Detroit, is architect.

COLUMBIA—Utilatree Products Inc. has been incorporated with $25,000 capital by H. Nelson Albright to manufacture and deal in castings, novelties and art goods.

ERIE—United States Metal Products Co. has been incorporated with 50,000 no par shares by Robert C. McElroy to smelt and refine copper, brass, aluminum and other metals.

OIL CITY—Oil City Boiler Works, F. Ande purchasing agent, 351 Seneca street, will build a boiler plant at a cost of $40,000. Contract has been awarded to L. O. Bouquin, 13 East First street.

PHILADELPHIA—Hope Machine Co., 2310 North Second street, has a building permit for a shop on Pearson street, west of State road. Estimated cost, $2000.

PHILADELPHIA — Philadelphia Insulated Wire Co., 200 North Third street, will alter its plant at a cost of $800. Contract has been awarded to A. Raymond Raff Co., 1635 West Thompson street.

PHILADELPHIA—Philadelphia Business Progress association, care of chamber of commerce, has arranged for the lease of 60,000 square feet of floor space to a manufacturer of electrical products, identity withheld. Operation will begin about Sept. 1.

PITTSBURGH—Beckwith Machinery Co., 500 Arch street, has let contract to Austin Co., builders, Union Trust building, for a combination service shop, warehouse and show room at 6600 Hamilton avenue.

SCRANTON—Stanton Aircraft Corp., William Hallstead president, 314 Adams avenue, has acquired 180 acres at a site 10 miles from here on Roosevelt highway for an airport project to be undertaken immediately. Estimated cost, approximately $250,000.

UNIONTOWN—Liberty Explosives Corp., J. H. Lytle secretary, 1406 Clark building, Pittsburgh, plans construction of a plant here at Connellsville and Uniontown highways. Plans are private.

New Jersey

BOUND BROOK—Calco Chemical Co., 286 Spring street, New York, will soon receive bids for a chemical plant here. Joannes & Marlow, 420 Lexington avenue, New York, are architects. Cost is approximately $150,000.

HAWTHORNE—S. Braen, 115 Totowa avenue, plans to build a 2-story, 90 x 140-foot garage and repair shop at Nelson and Pasadena avenues, at a cost of about $150,000. J. C. Van Vlendren, 140 Market street, Paterson, N. J., architect, is receiving bids.

MONTCLAIR—L. White, care of A. E. Ramhurst, architect, 516 Bloomfield avenue, will build a 2-story, 100 x 150-foot garage at Glenridge and Grove streets, at a cost of about $150,000.

NEWARK—Aluminum, Brass & Copper Works has been incorporated with $100,000 capital by William H. Parry, attorney, 244 Chestnut street.

NEWARK—Allied Products Corp., 4645 Lawton avenue, Detroit, manufacturer of punches and dies, has leased a 2-story plant at Hunter street and Freylinghuysen avenue, for a branch plant.

NEWARK—J. Black, 246 Central avenue, will build a 2-story auto radiator shop and repair garage, 100 x 150 feet, at 268 Central avenue, at a cost of about $50,000. M. A. Wolf, 845 Broad street, architect, is receiving bids.

PAULSBORO—Max B. Miller & Co., 501 Fifth avenue, New York, has awarded contract for the design and construction of filtration plants here to Austin Co., 16112 Euclid ave-

Resale News

Wood Turret Machine Co., Brazil, Ind., has been bought by the McDonald Machinery Co., St. Louis, which will offer it for sale as a whole or in divided lots. The plant has been idle for some time.

* * *

Industrial Plants Corp., 25 Church street, New York, has been appointed auctioneer to sell at absolute public auction all machinery and materials of the Vonnegut Machinery Co., 25 West South street, Indianapolis. The sale will take place on Tuesday, Aug. 12. Descriptive catalogs are available. Everything will be sold by piece and the plant will not be offered as a whole.

nue, Cleveland. Three units will be built at a cost of $200,000.

TRENTON—Delaval Steam Turbine Co., North Clinton avenue and Pennsylvania railroad, has awarded contract to J. W. Ferguson Co., 152 Market street, Paterson, N. J., for the construction of a 1-story plant.

WEST ORANGE—Domestic Heat & Service Corp. has been incorporated with $100.000 capital by Simeon H. Rollinson, 282 Main street, Orange, N. J., to manufacture heating appliances.

Ohio

CLEVELAND—Terminal Smelting Co. has been incorporated with 250 no par shares by Robert I. Koplow, 1508 Guarantee Title building.

CLEVELAND — Cleveland Stoker Co. has been incorporated with $500,000 and 6500 no par shares by Fackler & Demson, attorneys, 308 Euclid avenue.

CLEVELAND—Board of education, Standard Trust Bank building, is in the market for a cylinder grinder, four lathes, one planer, one cutter grinder, twenty 8-inch chucks, milling machine, shaper and open-side crank shaper.

CLEVELAND — Republic Brass Co., 1263 East Forty-fifth street, has awarded contract for a foundry addition, one and two stories, 21 x 136 feet, on East Forty-seventh street, to A. A. Lane Construction Co., 1873 East Fifty-fifth street. Christian, Schwarzenberg & Gaede Co., Union building, is architect.

CLEVELAND — Ohio Rubber Co., Willoughby, will construct an addition for the manufacture of automobile running boards from rubber and steel. Unit will cost $100,000 and machinery will cost $500,000. Contract has been awarded to H. K. Ferguson Co., Hanna building.

CLEVELAND—Midland Steel Products Co., producer of automobile frames and mechanical four-wheel brakes, has acquired all rights covering air brakes for automobiles, and air brakes and starters for airplanes from N. A. Christensen, inventor, and will start development and production, adding to working forces.

COLUMBUS—Franklin county board of commissioners, recently noted as receiving bids for power plant alterations and additions at the county home, has rejected all bids submitted and will receive new bids August 22. Three new boilers are included in the project. (Noted July 3.)

LANCASTER—Ornamental Bronze Mfg. Co. has been incorporated with $60,000 capital by John E. Silbaugh, 187 West Main street.

MARION—Marion Vault Mfg. Co., whose incorporation recently was noted, will begin operations within 30 days in a building with available floor space of 25,000 square feet. Company will manufacture metal burial vaults and other sheet metal products. Jay H. Maish is the company's agent. (Noted July 31.)

OXFORD — Miami university plans erection of five new buildings at a cost of $2,000,000. Project includes workshop.

STEUBENVILLE — Iro - Metals Corp. has been incorporated with 250 no par shares by Jack N. Berkman, 407 Sinclair building.

TOLEDO—Motor Rim Mfg. Co., Canton & Smith streets, S. G. Goench manager, has leased and will remodel a plant building at Eleventh and Monroe streets, formerly occupied by Electric Power Maintenance Co.

WARREN — Federal Machine & Welder Co., Dana avenue, advises through S. A. McBerty, secretary, that a new unit, 60 x 200 feet, with crane capacity of approximately 50 tons, is to be built. New equipment needed will include a floor borer and portable draw cut planer. (Noted July 31.)

Indiana

GREENSBURG—Standard Casket Hardware Co., whose plant recently was noted as damaged by fire, has awarded contract for a new plant on North Anderson street. Estimated cost, $40,000. (Noted July 24.)

HAMMOND—Northern Indiana Public Service Co. proposes to build a substation here at a cost of about $80,000.

INDIANAPOLIS—Sey-Ley Mfg. Co. Inc. has been incorporated with $5600 capital and 255 no par shares by Harry L. Kelley, 2173 Sugar Grove avenue, to manufacture and market a razor blade device.

INDIANAPOLIS — Combustion Vitalizer Corp., recently incorporated with 1600 no par shares, has established temporary headquarters at 1019 East Fifteenth street, and has started production of a device to increase boiler efficiency and eliminate smoke. Sherman H. Tompkins is president.

KOKOMO — Haynes Stellite Co., manufacturer of alloy steel and tools, has awarded contract to C. L. Sanders & Son, Portland, Ind., for a plant on Park avenue. Cost is approximately $50,000.

WILLIAMSPORT — Williamsport Mfg. Co. Inc. has been incorporated with $1100 capital by Edward Smodell and John M. DeMotte, to manufacture and deal in automobile accessories.

Michigan

BIG RAPIDS—Big Rapids American Legion has leased a 77-acre tract near here for use as a municipal airport.

DETROIT—Albert Kahn Inc., 1004 Marquette building, architect, is taking figures for boilers, stokers, feed pump, feed water heater and other equipment for the power house for the city house of correction.

STURGIS—Plant of B. F. Freeland Tank Co. recently was damaged by fire. Foundry room, engine room and electrical equipment were damaged to the extent of $2500.

TRAVERSE CITY—Michigan United Light & Power Co., Ludington, Mich., will build a power plant on the Boardman river near here at a cost of $350,000 with transmission lines.

YPSILANTI — Franklin Glider Corp., whose incorporation recently was noted, advises through A. P. Atran, vice president, that the company has leased the plant of the former Lewis-Geer Mfg. Co., and has started production of gliders. Welded steel tubing is used for the fuselage, wing tip, and tail surface. Prof. R. E. Franklin of the University of Michigan is president of the company. (Noted July 24.)

Illinois

CHICAGO — Grigsby-Grunow Co., 5801 Dickens avenue, has a building permit for construction of a plant addition. P. E. Paulsen, 1856 North Kostner avenue, is architect. Cost is estimated at $6000.

CHICAGO—Adjustable Multi-Flange Radiator Co., 29 South LaSalle street, room 808, has been incorporated with $10,000 and 2000 no par shares by Hugo Radau, attorney, 651 West North avenue, to deal in radiators.

CHICAGO—Auto Craft Radio Co., recently organized, has leased a building at Twenty-eighth street and South Michigan avenue for the manufacture of radios for automobiles, airplanes and boats.

CHICAGO — Chicago Dryer Co., 2210 North Crawford avenue, advises through M. E. Johnson that construction plans and contracts for a new unit on land recently noted as acquired will be held in abeyance indefinitely. (Noted July 31.)

CHICAGO — Majestic Household Utilities, 5301 Dickens avenue, has awarded contract for the construction of a plant for the manufacture of electric refrigerators, on Armitage avenue south. Unit will be one story, 40 x 175 feet, and will cost approximately $15,000.

ELGIN—Hangar and repair shop of Mid-Western Aircraft Co. recently were damaged by fire, causing a loss of $15,000.

GREENVILLE—Firefly Industries, whose incorporation recently was noted, advises through Stanford S. Meyer, secretary, that the company has leased a building here for the manufacture of wrought iron table and floor lamps, wrought iron porch and garden furniture, and wrought iron novelties. Office is located at 120 South First street. (Noted July 31.)

HARVEY—Ingalls Shepard Forge Co., division of Wyman-Gordon Co., Worcester, Mass., has begun construction of a 1-story laboratory unit, 100 x 150 feet, to cost $75,000 with

equipment. Future changes will be made in the heat treating department.

MOUND CITY—Mound City Ship Yards & Dock Co., recently incorporated for $40,000 to take over the Mound City Ship Yards, will build and repair steel boats and barges and will add a steel fabricating shop. W. B. Thistlewood, Cairo, Ill., is president and general manager.

MT. CARMEL—Lincoln Foundry, care of Alex Ehret, recently was damaged by fire. Loss is estimated at $1000. Principal damage was to patterns.

Southern States

BIRMINGHAM, ALA.—City, A. J. Hawkins engineer, will receive bids in October or November for hangar unit and administration building at the municipal airport. E. W. Stanford, Martin building, is architect.

WASHINGTON — H. Herfurth Jr. Inc., District National Bank building, is reported to be in the market for an air compressor.

WASHINGTON—Department of commerce has been informed by Consul Raleigh A. Fibson, Guadalajara, Mexico, that the modern penitentiary under construction at Jalisco, Mexico, will call for purchases in the United States. General prison will include carpenter and mechanical shops.

ATLANTA, GA. — Georgia School of Technology, recently noted as planning an aeronautics building, advises through Professor Harold Bush-Brown that equipment to be installed will include a wind tunnel and testing apparatus. (Noted July 24.)

BAINBRIDGE, GA.—H. L. LeGette heads interests developing an airport here. Site has been selected.

COVINGTON, KY.—Fries & Son Co., Second street and Madison avenue, have plans for an addition costing about $30,000. Unit will be 1-story, 60 x 130 feet. Company manufactures steel cells and other steel products .

NEW ORLEANS — New Orleans Air Transport Co. is reported to be merging with Rankin Flying Service Inc., Box 4268, Portland, Oreg., and Simplex Aircraft Corp., an Ohio company, which will call for establishment of two airplane plants, landing field, and aviation school. Cost of the tentative project, $750,000. William E. Hoefgen is manager of the New Orleans company.

LEXINGTON, N. C.—Shop building and foundry of C. M. Thompson's Sons, manufacturers of building materials, recently were damaged by fire. Loss is estimated at approximately $50,000.

NASHVILLE, TENN. — Tennessee Electric Power Co., Chattanooga, Tenn., has plans for extensions in substations and transmission lines here. Cost is estimated at $100,000.

BLACKSBURG, VA. — Virginia Polytechnic institute, J. A. Burruss president, whose expansion recently was noted, has awarded contract for a mechanical engineering building to D. J. Phipps, Roanoke, Va. Unit will cost about $250,000. (Noted May 1.)

WINCHESTER, VA. — Electric power equipment and a boiler plant are planned in a proposed new food products canning plant to be built by H. J. Heinz Co., 1062 Progress street, Pittsburgh. Cost of the entire project is estimated at $100,000.

Missouri

CARUTHERSVILLE—City is reported to have plans for a light and power plant and system, to be built at a cost of $90,000.

HAYTI—City is having plans prepared for a municipal power plant, to cost $80,000 with equipment. Russell & Axon, 6200 Easton avenue, St. Louis, are engineers.

KANSAS CITY—Plant of Southwest Iron & Wire Works, 1720 Tracy avenue, recently was virtually destroyed by fire. Estimated loss, $50,000.

ST. LOUIS—Liberty Foundry, 7600 Vulcan avenue, manufacturer of gray iron castings, recently was damaged by fire. Estimated loss, $3000.

Arkansas

CONWAY — Hendricks college, Little Rock, Ark., plans construction of a 3-story, 100 x 200-foot science building here, at a cost of about $140,000. Wittenberg & Deloney, Home Life building, Little Rock, Ark., are engineers.

HAMPTON—Consumers Utility Co., Little Rock, Ark., will rebuild the light plant here, recently damaged by fire.

WEST MEMPHIS — West Memphis Power & Water Co. has plans for a power house to cost about $90,000.

Oklahoma

BARTLESVILLE—Cities Service Gas Co. will construct a pipe line development calling for erection of four gas compressor stations, with equipment, as follows: near Seminole, Okla., $150,000; at Moreland, Okla., $75,000; at Blackwell, Okla., $60,000; near Higgins, Tex., $90,000. Plans are private.

CLINTON—City council has approved plans for a new airport here. Site is being selected.

MAUD—Western Machine & Tool Co., J. A. Wright manager, is in the market for a hollow spindle lathe.

NORMAN—City commission is receiving bids for two diesel engines and two belt-connected centrifugal pumps for the municipal water plant.

TULSA — St. Louis-San Francisco railroad, F. G. Jonah chief engineer, Frisco building, St. Louis, has let contract for the construction of a power house, one story, 44 x 56 feet. R. C. Stevens, Frisco building, St. Louis, is architect.

Texas

AMARILLO—North Texas Machinery Co. has been incorporated with $24,000 capital by M. M. Mayfield, 1111 West Thirteenth street, to operate an automotive repair shop.

GALVESTON—E. J. Hoffman Mfg. & Development Co., E. J. Hoffman president, care of chamber of commerce, will build a plant to manufacture automobile headlights, air pumps, and airplane accessories. Unit will be 1-story, 50 x 200 feet.

LUBBOCK—City council has plans for construction of a hangar unit at the municipal airport. Main unit is to be 80 x 120 feet, and smaller unit to house offices and shops is to be 27 x 80 feet. Cost is estimated at $22,000.

Wisconsin

KENOSHA—Specialty Brass Co. is reported to be considering enlargement of plant for increased production.

MADISON—G. E. Nelson, commissioner of buildings, advises that city repair shop and garage recently noted as planned, will be 70 x 235 feet. Eight elevated reinforced concrete hoppers with elevating equipment are among items for installation. (Noted July 24.)

MILWAUKEE—Schwab Furnace & Mfg. Co., 283 Clinton street, organized to carry on operations of R. J. Schwab & Sons Co., whose plant removal to Cedar Grove, Wis. recently was noted, advises through Henry E. Schwab, president, that most of the equipment of the milwaukee plant is being moved. Some purchases, not immediate, may include molding machinery. (Noted July 17.)

Minnesota

CLOQUET—Minnesota Power & Light Co., 30 West Superior street, Duluth, plans to rebuild its power plant here.

ST. CHARLES—City contemplates improvements in municipal power plant, to cost approximately $50,000.

South Dakota

PIERRE—City will receive bids until August 8 for two diesel engines, 600 and 750 horsepower, and two electric generators, for installation in a power plant addition recently noted. (Noted July 24.)

Iowa

CHARLES CITY—Currie Construction Co., Waterloo, Iowa, is directing an expansion program here for the Iowa Public Service Co. A power plant addition will be constructed at a cost of

$25,000. One high pressure boiler and other equipment will cost $75,000.

EAST DES MOINES — Chicago, Rock Island & Pacific railroad, 179 West Jackson boulevard, Chicago, has awarded contract to Arthur H. Neumann, Des Moines, Iowa, for a 10-stall addition to its engine house here..

HAMPTON — Iowa state highway commission, Mason City, Iowa, has closed bids for the construction of a 1-story maintenance garage and shop here, and another at Eldora, Iowa.

IOWA CITY—Boeing Air Transport, Seattle, Wash., plans construction of a hangar unit at municipal airport here, 80 x 100 feet. Contract has been awarded to Austin Co., 16112 Euclid avenue, Cleveland. Cost is estimated at $40,000.

NEVADA—Iowa Railway & Light Corp., Cedar Rapids, Iowa, proposes to build a new power plant here at a cost of about $175,000.

TOLEDO—Iowa Railway & Light Corp., F. C. Chambers general manager, 201 Second avenue, Cedar Rapids, Iowa, is reported to be in the market for diesel engine-driven generators.

Idaho

SAND POINT—City has plans for a power plant on the Priest river, near here. Estimated cost, $300,000.

Arizona

PHOENIX—Arizona Edison Co. and Salt River Valley Water Users' Association propose to build a joint transmission line and three power substations. Cost is estimated at $450,000.

New Mexico

TUCUMCARI—Tucumcari Power & Light Co. plans an addition to its power plant.

Utah

HEBER — City has voted bonds amounting to $75,000 for a municipal hydro-electric power plant.

Pacific Coast

LOS ANGELES—United Airport, Hollywood way, Burbank, is reported to be considering erection of three hangar units, 150 x 340 feet.

OAKLAND, CALIF.—Gobert Machine Works has leased 1750 square feet of floor space at 1025 Forty-first avenue for the manufacture of a dry concentrator for mining purposes, and also to engage in general jobbing work.

PASADENA—City directors will receive bids soon for two boilers for the city light plant, at a cost of over $200,000. Plans are being prepared for an addition to the municipal light plant, by Bennett & Haskell, First Trust building. Cost, $150,000.

POMONA, CALIF.—Pomona Mfg. Co., manufacturer of pumps, has started to build a plant unit, 140 x 175 feet, to be used as a machine shop, and another to be used by its service department.

SAN FRANCISCO — Pacific Box Corp. Ltd. is constructing a 1-story plant addition at 2600 Taylor street. Production will be increased 25 per cent with the installation of new machinery.

Dominion of Canada

NELSON, B. C.—A. G. Lambert Co. will rebuild its sawmill at Sproule Creek, recently damaged by fire, and is in the market for equipment. New building will cost $30,000.

OTTAWA, ONT.—Ontario Hydro-electric commission, Toronto, Ont., has completed a survey of power possibilities of the St. Lawrence river in the International Rapids region, report of which has been made public by the government. Entire project, in a state of investigation only, would cost over $270,000,000, including an item of over $30,000,000 for machinery and superstructure.

TORONTO, ONT. — Adjusto-Roll Screens Ltd. has been incorporated with $50,000 and 2500 no par shares by Reginald W. Godson, 435 Parkside drive, to manufacture and deal in window screens.

WALKERVILLE, ONT. — Dominion Forge & Stamping Co. of Canada Ltd., Walker road, has awarded contracts for a 1-story plant here. Unit will be 120 x 480 feet, costing $150,000.

WALKERVILLE, ONT.—Ford Motor Co., Fordson, Mich., is reported to be planning extensions to its power plant at its branch plant here.

LACHINE, QUE.—Northern Electric Co. Ltd., 1600 Notre Dame street west, Montreal, Que., proposes to build a 1-story addition on North Rockfield avenue. J. O. Despatie is architect.

New Trade Publications

ELECTRIC EQUIPMENT—Allen-Bradley Co., Milwaukee, announces in a bulletin the addition of a new type of pressure switch of small dimensions. The bulletin is illustrated.

GEAR BURNISHER—City Machine & Tool Works, Dayton, O., in a current bulletin describes a gear burnisher with automatic control, designed to cut unit costs. Illustrations and text make plain the operation of the device.

SPROCKETS AND CHAIN—Cullman Wheel Co., Chicago, has issued a handbook on sprockets and sprocket chain and their uses. It describes many types of these devices and contains much pertinent information on the subject.

COMPRESSORS— Three bulletins have been issued by the Sullivan Machinery Co., Chicago, covering types of air compressors. A vertical, high pressure compressor is a new development. It is a single stage compressor driven by electric motors. Capacities are 120 to 240 feet. The other bulletins cover a straight-line compressor and a high pressure compressor. All are illustrated completely and contain engineering data.

SPECIAL SHEET STEELS—Superior Sheet Steel Co., division of Continental Steel Corp., Canton, O., in a current bulletin seeks to indicate some of the varied uses to which its special sheets are being put by manufacturers seeking a lasting material that will stand time and wear. It is well illustrated.

LUBRICATION—Meeting the operating conditions of warm-weather automobile driving is the subject of the current issue of the publication on lubrication by the Texas Co., New York. It discusses gasoline requirements and engine construction and lubrication, with a chart of suitable oils for efficient results at summer temperatures.

ECONOMIZER—A bulletin by the Combustion Engineering Corp., New York, covers its fin-tube type economizer, describing in detail features designed for economy of space and efficient operation, including few return bend joints, high rate of heat transfer, low water pressure drop and ease of accessibility for inspection and cleaning.

RESISTANCE THERMOMETERS—A revised catalog of its resistance thermometers is being sent out by Leeds & Northrup Co., Philadelphia. It covers resistance thermometers for recording, controlling and indicating temperatures. The catalog goes into applications for heating and ventilating, use in refrigerating and chemical plants, gas making and other comparatively low temperature uses.

ACID PROOFING—American Hard Rubber Co., New York, has issued a catalog describing uses for its hard rubber lining process for protecting metal containers from the action of acids and other corrosives in the chemical process industries. Tanks, pipes, pumps and other equipment lined with hard rubber for protection are among the uses illustrated. Illustrations, data tables and charts supplement the text.